Revised and Illustrated

CATALOGUE No. 10

of

Physical Instruments

for

use in Teaching or Experimenting in the various Sciences

by

Ferdinand Ernecke

Präcisions-Mechaniker and Optiker

BERLIN SW.

Sole Agents for Great Britain and Colonies:

O. NEWMANN & Co.

15 Francis Street, Tottenham Court Road

LONDON. W. C.

All orders must be sent through my London Agents.

The Apparatus contained in this list may also be ordered through the following firms:

Midland Educational Trading Co., Birmingham & Leicester.
Educational Supply Association Holborn, Viaduct, London E. C.
Marshall & Co., Paternoster Row E. C.
The Scholastic Trading Co., Bristol.
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Terms: Nett cash on delivery of the apparatus in Londen.
Foreign Orders must be accompanied by a remittance or order for payment in London.
Packing and cases charged extra two thirds allowed for returned packages.
The greatest care is taken in packing all goods so as to prevent accident by breackage, consequently we do not hold ourselves responsible for damage during their transit.

O. Newmann & Co.

Publishers & Importers of Educational Appliances & Implements

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	£ sh. d.
Agricultural Science. Dissectible Modells, illustrating the various ways of grafting. 6 Modells. 1) illustrating grafting on an appletree; 2) grafting by the side on a pear tree; 3) grafting in a slit made on an apple tree; 4) grafting in the bark of an apple tree; 5) inoculation process illustrated on a pear tree. The 6 dissectible Modells in Wooden box with work block & knife. The set	1. 1. —
Fruit Cabinet containing 130 apples, 93 pears, 2 peaches, 1 apricot, 38 plums modelled exactly & correct from nature of a durable composition. The set in 44 boxes with description	25. —. —
Collection consisting of 25 apples & 25 pears in polished case £ 7. 10. —. Single fruits . . . . . 2 sh. to	—. 2. 6
700 cross cuttings of different woods in 7 boxes with each 100 assort woods. With text by Prof. Nördlinger in German per box	1. —. —
Manure Collections 25 species of artificial manue in glasses	—. 7. 6
50 „ „ „ „ „ „	—. 15. —
Collection of Cereals 25, 50, 75 & 100 species price on application.	
Seed Collection by P. Henning 100 samples of agricultural seeds mixed with customary weeds. In glasses packed in box. Content 50 weeds, 25 feeding grasses 10 weedgrasses 15 clows	2. —. —
Seeds 200 in 2 boxes	3. 3. —
Seeds 300 in 3 boxes	5. —. —
450 agricultural & forrest seeds, specially arranged for Agricultural Schools & Colleges. In glassbottle & the set in a Wooden box	3. —. —
Mineralogical & geognostical Collection especially arranged for farmers consisting of such which form chiefly the crust of our earth & of such which are of significance for him 50 Minerale size 2 square inch	2. 12. 6
100 „ „ 2 „ „	5. —. —
Metamorphosen Collection of Insects destructive for forrestry & agriculture. Exhibiting Pupa, Larva of characteristic species Domicil & food. In 2 cases with glass top	4. —. —
Small Edition	2. 2. —
Insect Collections as follows to orders: Prices on application I. destructive on **wood** in Forrests II. „ „ **shrubs** & fruittrees III. „ „ **vegetables** &c. The above may also be had exhibiting Metamorphose.	
Potato analysed in the 17 components in 17 flasks	1 12. 6
Wheat „ „ „ 17 „ „ 17 „	1. 12. 6
Hay „ „ „ 17 „ „ 17 „ The above acording to Prof. Freytag as exhibited in the Museum for agriculture in Berlin.	1. 12. 6
Collection of Plough Modells by Dr. Rau 30 Modells primitive & modern plough's	35. —. —
Collections of small agricultural Modells of wood in Box	—. 18. 6
Collection of useful & pernishous birds for the Farmer and Forester to order. Consisting of such who feed on Insects, mice, vermins, cereals &c.	
The Bee and her Industrie complete in box with glass top large Edition	1. 10. —
Dito small Edition	—. 6. —
Collections of Insects, Butterflys, Beetles &c. in greatest variety.	

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PREFACE.

The rapid advance Technical Education has made on the Continent and the increasing interest taken in this country for improving existing facilities for technical Instruction in the establishment and maintenance of Schools in which Science and Art are taught have induced us to continue in our endeavours to import into this country such Educational Appliances and Instruments, which are likeley to serve as valuable assistants for Educational purposes.

Having arranged with one of the first Continental firms who for nearly 30 years have made it their speciality to manufacture Apparatus and Instruments for Schools, Colleges and Universities and whose Instruments adorn the Laboratories of the chief Educational Establishments on the Continent we now offer to the Autorities of English Schools and Colleges a profuseley illustrated catalogue, on which has been bestowed the greatest care to make it as complete a guide for the selection of necessary Instruments as possible, no means have been spared in providing woodcuttings in order to illustrate the chief apparatus for better comprehension and notes will be found indicating in what books a full description of the apparatus can be found. The Translation of the catalogue in the english language was not an casey one and errors may, therefore in this first edition, well be excused.

On the following pages a few of the thousands of testimonials received by the makers will be found. We thought it opportune to insert these flattering testimonials from imminent man Doctors and Professors in whose hands the Education on the Continent rests, as many of these names will be familiar to our english friends and so serve as an introduction into circles where our endeavours to introduce the educational appliances from the Continent are not yet known.

The present Edition contains complete lists of apparatus applied for teaching Physic's Dynamo's Sound, Light, Electrical Science &c. With ease authorities will be able to select the most appropriate apparatus, be it for the instruction in thermometry, calorimetry, pyrometry, reflexion, refraction, polarisation of light or for experimenting in current and statical electricity, telegraphy, resistance and measurement of bodies for chemico-physical operations and researches &c. The list for chemical apparatus is not complete and contains only those most used, it is however our intention to publish a special list for Chemical Appliances shortly.

Our prices will be found moderate, if we remind you that all apparatus manufactured by our friends in Berlin are of first class workman ship and exact and accurate in every of its minutest details, and the manufacturers engage themselves to exchange any Instrument which does not fulfil the above conditions.

It should be understood that we supply every kind of scientific apparatus and Instrument although not classified in above list whether it be for Astronomical, Chemical, Agricultural, Medical or Surgical Purposes or for Scientific Observatories, being in connection only with first class makers we guarantee the efficiency of every Instrument supplied.

In compiling this Catalogue the following books have been made use of:

Müller-Pouillet, Lehrbuch der Physik, 7th. edition. 1878 – 81. Published by Friedrich Vieweg & Son, Brunswick.

A. Weinhold, Physikalische Demonstrationen. 1881. Published by Quandt & Haendel, Leipsic.

Frick, Die physikalische Technik, 5th. edition 1876 and 4th. edition 1872. Published by Friedrich Vieweg & Son, Brunswick.

Krumme, Lehrbuch der Physik für höhere Schulen. Published by Grothe, Berlin.

Krebs, Die Physik im Dienste der Wissenschaft, der Kunst und des praktischen Lebens. Published by F. Enke, Stuttgart.

Carl's Repertorium der Physik. Published by R. Oldenbourg, München.

Eisenlohr, Lehrbuch der Physik, 10th. edition. Published by J. Engelhorn, Stuttgart.

Poggendorf's Annalen der Physik und Chemie. Published by J. A. Barth, Leipsic.

Zeitschrift für Instrumentenkunde. 1881. Published by Julius Springer, Berlin.

Humboldt, Monatsschrift für die gesammten Naturwissenschaften. Published by F. Enke, Stuttgart.

Bericht über die wissenschaftlichen Instrumente auf der Berliner Gewerbe-Ausstellung im Jahre 1879. Published by Julius Springer, Berlin.

H. W. Vogel, Praktische Spectralanalyse irdischer Stoffe. — Published by Beck, Nördlingen.

Schellen, Published by Dumont-Schauberg, Cologne.

Journal de Physique, Théorique et appliqué. Published: Bureau de journal de Physique, Paris.

Bericht der deutschen chemischen Gesellschaft. Published by A. W. Schade, Berlin.

Trusting that our endeavours to serve a good purpose will meet with success and soliciting your esteemed patronage and recommendation we remain

your obedient Servents

O. NEWMANN & Co.

Publishers and Importers of Educational Appliances,

15 francis street, Tottenham Court Road,

LONDON W. C.

Some Testimonials obtained.

In reply to your inquiry of the 18th inst. I beg to inform you, that the little Dynamo-Machine (the larger pattern) which you supplied for the Physical Institute, fulfils all requirements which may be expectet from one so small apparatus. — Acidulated water is most liveley decomposed by it, a small Swan's Incandescent lamp (of 14 S E resistance) is brought into violent glowing. At the utmost rapidity of rotation, which can be obtained with the hand, it supplies with 1 S E exterior resistance a current of about $3^1/_2$ Ampères, with 10 S E exterior resistance a current of $2^8/_5$ Ampères.

BERLIN, NW., the 23th January 1884.

Physical Institute of the University.

Professor Dr. **H. v. Helmholtz.**

In the year 1882 I have received from Mr. Ferdinand Ernecke for the Normal Lyceum of our city several physical apparatus and utensiles. — I have the pleasure of attesting, that all supplied articles have proved good and suitable for the purposes for which they were intended.

HELSINGFORS, the 18th February 1884.

Dr. **E. J. Mellberg,**
First Teacher of Mathematics and Physics at the Normal-Lyceum at Helsingfors.

The apparatus for physical instruction supplied by you are of exact and solid workmanship, also of practical arrangment, so as to be of real use for the instruction. The price is also a moderate one. — I have also been fully satisfied with your last sending.

CONSTANTINOPEL, the 24th February 1884.

F. Th. Mühlmann,
Rector of the German and Switzer School.

The Apparatus, which I received since years for the purposes of instruction from the workshops of Mr. Ferdinand Ernecke, Optician of our City, have proved in every respect suitable for their purpose. — This is more peculiarly the case with the dynamo-electric machine of Siemens' construction, which in a quite excellent manner I find suitable for illustrating the transmission of mechanical work in electricity and their transposition in chemical action, light and heat. By this machine the galvanic elements are made really superfluous.

BERLIN, the 17th January 1884.

Dr. **Ad. Schumann,**
Professor of the Ascanisches Gymnasium.

Since several years we received from Mr. Ferdinand Ernecke, Mechanician and Optician at Berlin, for the Schools of our City a considerable number of Physical Apparatus. They have always met our satisfaction, as well as regards the construction as the execution. These apparatus have also found much approval and attention at numerous School-Exhibitions. This we attest with great pleasure.

With be Dynamo-Machine we were much pleased and hope soon to send a new order.

STOCKHOLM, the 23th. February 1883.

Svanström & Co.

We are pleased to testify that since many years a great number of suitable, perfectly well made and priceworthy physical apparatus have been supplied from your factory for the public schools of our city.

BERLIN, the 26th. January 1884.

The Berlin-School-Deputation
Schreiner.

The apparatus supplied by Mr. Ferdinand Ernecke of Berlin for the Physical Cabinet of the Rostock-Gymnasium are remarkable by their solid construction, elegant making and the very moderate price. — Having been several years in use at our schools, the apparatus still continue to work well and to be of practical use for the instruction. — I warmly recommend Mr. Ernecke to all colleagues.

ROSTOCK, the 14th. February 1884.

Dr. **E. Wrobel,**
Teacher of Mathematics and Physics at the Gymnasium.

With pleasure I attest, that the physical apparatus supplied by the mechanical workshops of Ferdinand Ernecke, Berlin SW., have proved excellent in every respect. The goods of his manufacture are preferable to others by a certain genuineness of construction, solid making, pleasing exterior and — last not least — a comparatively low price.

CZERNIKOW near KRAKAU, March 1884.

Dr. **Ludwig Birkenmayer,**
Professor at the Agricultural College, Docent of Mathematics at the K. K. University Krakau.

I hereby attest, that the physical apparatus supplied by Mr. Ferdinand Ernecke, Instrument-Maker, of Berlin for the superior public schools of our City, are instructive, practical and comparatively to their price very well made.

ABO, FINNLAND, the 14th. March 1884.

Axel Berner,
Inspector of the Schools.

Mr. Ferdinand Ernecke of Berlin has supplied for the Physical Cabinet of our Archigymnasium a dynamo-electric Hand-Machine A for the price of 380 Mark. — This machine is of very exact making and answers to all my expectations. — The current produces a beautiful bowlight, rapidly decomposes water, makes to melt an iron-wire of 12 Inch lengths 0,25 mm thickness and causes a platinum, spiral wire of same thicknes, and one yard length to glow.

SOEST, the 24th. March 1884.

Professor Dr. **Bresina.**

We regret that there has been only after translocating, new establishing and opening of the School-Museum of Utrecht occasion of testing your machines. — The machines have proved to meet in any respect the purpose, for which they are made. — All teachers of our City, who have bought the machines, acknowledge, that they are in any respect well made and I dare assure you, that in short they will be introduced in each good College or University of Netherlands. — With great pleasure I attest also, that all other physical apparatus of your manufacture are by their good execution and cheapness superior to any other.

UTRECHT, the 23th. February 1884.

D. Buys, Dz.
Algemeen-Schoolmuseum.

Mr. Ferdinand Ernecke has supplied for the new Cabinet of the Royal Luisen-Gymnasium several apparatus, relating to electricity, galvanism and mechanics. — I am pleased to attest, that these apparatus are remarkable by their exact execution, cheap price and suitable for making exact measures, in the limits required for schools-purposes.

BERLIN, March 1884.

Dr. **Felix Müller.**

Having received a great number of various apparatus for the Physical Cabinet of the Academy Royal of Forests from the mechanical Workshop of Mr. Ferdinand Ernecke, I hereby attest, that these apparatus are remarkably solid and good making and have also an elegant exterior.

EBERSWALDE, the 19th. March 1884.

Dr. **A. Müttrich.**
Professor at the Academy Royal of Forests.

Since many years I have received by Mr. Ferdinand Ernecke of Berlin Apparatus for the physical Cabinet of the Gymnasium Royal of our City, among which for instance: One Atwood's Fall-Machine, one great Electro-Magnete with accessories for diamagnetical essays, one great Ruhmkorff's Coil-Inductor and other. — The good and exact making of the apparatus answered to the suitable and practical construction. — The prices were also very moderate ones. — From an experience of several years I can only best recommend to all colleagues the Physical apparatus issued of the manufacture of Mr. Ferdinand Ernecke of Berlin.

DUISBURG, the 23th. January 1884.

Dr. **B. Closterhalfen.**

The physical apparatus, which since many years I received from Mr. F. Ernecke, have proved also after a long use excellent for the instruction. — Being made also with great exterior elegance, they are an ornament for any physical Cabinet. — As they have moreover very cheap prices, they can be recommended to all schools.

SCHLESWIG, the 21th. January 1884.

W. Fiedler.
Head-Master at the Royal Domgymnasium.

On your demand I am pleased to inform you, that I have always been satisfied with the apparatus supplied for the Physical Cabinet of the Raths- & Friedrichs-Gymnasium, as well as regards the careful execution, accuracy and usefulness.

CÜSTRIN, the 19th. January 1884.

Dr. **C. Baer.**

Since about 30 years Mr. F. Ernecke, instrument-maker of Berlin, supplies the physical apparatus for the Gymnasium Arnoldinum of our City. — With pleasure I attest, that they are in every respect price-worth, of good solid material, beautiful shape, and moreover, which is a important point, very accurately and exactly made in all single parts. Experiments may be made with them easily, safely and agreably.

BURGSTEINFURT, the 20th. January 1884.

Orth, Head-Master.

Since many years I received from the Manufacture of Mr. Ferdinand Ernecke a great part of the apparatus required by the Royal Mariengymnasium of Posen. I have always be fully satisfied with the execution of my orders. The articles of Mr. Ernecke's manufacture are exceedingly well made, of elegant appearance and cheap. They are of essential use for the promotion of the physical instruction at our schools.

POSEN, the 20th. January 1884.

Professor Dr. **Wituski.**

Since many years I have received from Mr. Ferdinand Ernecke apparatus for the instruction in Physics. The Same were without exception of solid, elegant and suitable making. As they are also of moderate price, I can only recommend them to my colleagues. — Said firm deserves still special recognition by their continual efforts, of illustrating new discoveries in Physics with new suitable apparatus, meeting thus all requirements of time.

GEBWEILER, Alsacia, the 27th. January 1884.

Dr. **Gerhard,**
Director of the Real-Gymnasium.

I am pleased to attest to Mr. Ernecke, that all physical apparatus which he has supplied to two superior schools of our City, deserve in any respect our full satisfaction.

AACHEN, February 1884. Professor Dr. **Sieberger.**

I attest with pleasure, that Mr Ernecke, during the long time in which I have been in business relation with him, has supplied all apparatus which I needed for the Physical Cabinet of the Real-School at Görlitz and in the latter years for the Real-Gymnasium am Zwinger at Breslau and that the apparatus always have met my full satisfaction.

BRESLAU, the 14th. February 1884.

Professor Dr. **H. Schmidt.**

On your demand I am pleased to inform you, that the Physical Apparatus, which you have supplied for our Agricultural-School, have proved in every respect satisfactory.

LIEGNITZ, the 11th. February 1884. Dr. **E. Herbing.**

The Physical apparatus, which I received from you, have my approval, as well as regards the execution as the price.

THARAND, February 1884.

Professor **Kunze,**
Academy of Forests.

I am pleased to attest, that the Physical apparatus supplied by Mr. Ferdinand Ernecke for the seminary of our City, have been always accurately made, suitable and price-worthy.

REICHENBACH O/L., the 9th. February 1884.

Herzog,
Teacher of the Seminary.

We are pleased to inform you, that we are highly satisfied with the Dynamo-electric Machine A. for hand movement, which we received from you and that it answers perfectly to all requirements which are mentioned in the prospectus.

DRESDEN A., the 22th. February 1884.

O. L. Kummer & Co.,
Department for the Construction of Electric Apparatus.

I am pleased to certify, that the Physical Apparatus and especially the Air-Pump, which you supplied to us, meet all requirements, and that they are of solid and elegant making, and in every respect worth the price.

ZEITZ, the 9th. February 1884.

Karl Ziegler, Teacher.

On your demand I am pleased to attest, that the physical apparatus and model, which you have supplied for our school, are not only a decoration of the Cabinet, but also in every respect worth the price. Their arrangment for the purposes of schools is a so comfortable one, they work so accurately and precisely, that it is a pleasure, to use them. I dare say, that your apparatus are by no means surpassed by any, which other renowned manufactures have supplied; I have therefore always recommended them warmly to my private- and school-friends.

OSTERODE (Ostpreussen), the 10th. February 1884

Engelien,
Teacher of the Seminary.

To complete the Physical Cabinet of the Boys-Median School of our town, to which I formerly was appointed as teacher, and to establish a new Cabinet for the Girl-School, I received since many years from Mr. Ferdinand Ernecke of Berlin apparatus, among which a Centrifugal-Machine, and Air-Pump with accessories, an Influence-Machine, and many other from all parts of Physics. — These apparatus were all accurate and well made, I dare say elegant, they work with the greatest accuracy, and never one has failed. — For limited means, as they were at my disposal, a reasonable price combined with good execution, is a valuable advantage. I found also other apparatus of cheap price, so called Volksschoolapparatus. With these the cheapness of price was only apparent, as they did fail after some years use. In reality Mr. Ernecke's apparatus, if the better results obtained and the greater durability is taken in consideration, are far cheaper.

JÜTERBOG, the 23th. January 1884.

Werner,
Rector of the Girl-Schools.

Mr. Ferdinand Ernecke has taken upon him to illustrate all new discoveries on Physics by suitable apparatus for Schools. These apparatus excel by a simple and easily intelligible construction, an easy management, reliable action and accurate workmanship. — They are also elegantly fitted and quoted at moderate prices. — Same can be said relating all apparatus of old and new construction, of which the Royal Elisabeth-School possesses a rich stock for all parts of Physics and which would be an ornament for any Physical Cabinet. — Mr. Ernecke has undertaken reparation of a great number of the elder apparatus and always successfully.

BERLIN, May 1884.

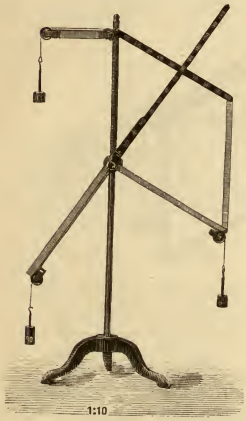
Dr. **Fr. Bachmann,**
Head-Master of the Royal Elisabeth-School.

I. Mechanics.

A. Statics and Dynamics.

	£	Sh.	d.
1. **Apparatus for showing the parallelogram of forces.** — Frick, Fig. 91, entirely of metal, upon tripod-stand and with adjusting screws	1.	6.	—
2. — do. upon round stand, without adjusting screws	—.	12.	6
3. — do. Bertram's, entirely of metal upon tripod-stand with adjusting screws	1.	18.	—

A detailed description of this apparatus will be sent on demand.



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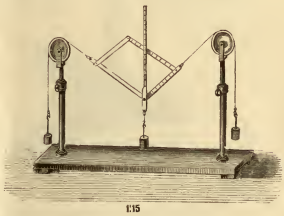

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No 5.

4. — do. same without adjusting screws	1.	9.	—

With the apparatus 1—4 a certain parallelogram, having been determined, weights are suspended to the ends of the strap, these weights will be proportionate to the sides or the diagonal of the parallelogram.

5. — new construction, entirely of metal, with stand on a board	1.	12.	—

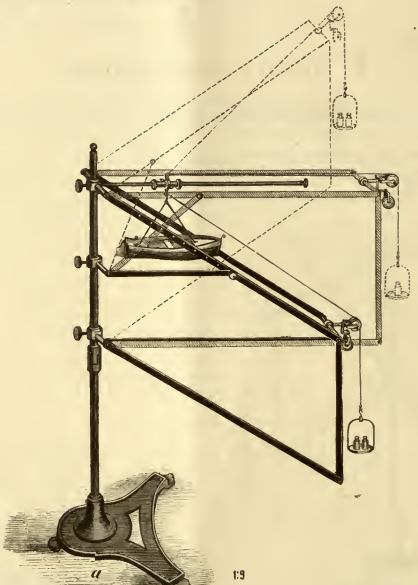
Any weights having been suspended to the ends of the strap, the parallelogram will form itself spontaneously and in such a manner, that its sides or diagonal will be proportionate to the suspended weights.

6. — do. simple pattern — Müller-Pouillet I. Fig. 17 — it consists of two rolls sliding on vertical rods, straps and weights	—.	14.	—
7. — do. same, of wood, quite simple	—.	8.	6

£ Sh. d.

Apparatus for showing the parallelogram of forces

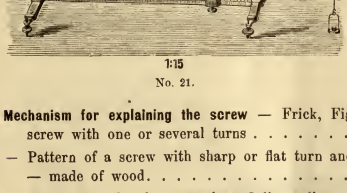
8. — Varignon's Table — see Krumme, Fig.. 9 . . . . . 2. 12. —
The apparatus 6—8 show only the direction of traction. The proportions of such to the side and diagonal of any given parallelogram has first to be determined.



No. 9.

9. — do. Sprockhoff's, illustrating at the same time the steering of ships. — A detailed description of this apparatus on application 2. 15. 6
10. — do. Kreb's, Fig. 24, consisting of two apparatus, one of which explains, how two lateral forces are combined to one resulting force, the other how one force can be devided into two lateral forces . . . . . 3. 9. —
11. **Joint-Lever.** — Frick, Fig. 94 — upon tripod-stand with adjusting screws 1. 9. —
12. — do. without adjusting screws . . . . . 1. 1. —
13. **Joint-Lever-Press** 2. 1. 6
14. **Diagonal-Machine** — Weinhold, Fig. 59 — with ivory-ball . . . . . —. 17. 6
15. — do. same, larger 1. 14. 6
16. — do. — Krebs, Fig. 25 — with electromagnetic ratch. . . . . 2. 12. —
17. **Eberhardt's Engine for the demonstration of a combined movement produced by the continuous action of forces** . . . . . —. 14. —
18. — do. — Frick, Fig. 97 — Model of the so-called flights of theatres . 1. 3. —

		£	Sh.	d.
19.	**Apparatus for the demonstration of the Principles of the inclined plane,** simplest model — Frick, Fig. 102	—.	17.	6
20.	— do. Bertram's, entirely of metal, with scales for the length, the base, and the heigth of the inclined plane, also with sextant. — Finest making, the points in agate-caps	4.	18.	—
21.	— do. same as 20, but without sextant	4.	6.	6
22.	— do. same as 20, with sextant but without adjusting screws, the points in steel-caps	3.	2.	—
23	— do. same as 22, but without sextant — Müller-Pouillet I. Fig. 640	2.	15.	6
	The construction of the apparatus 20 to 23 allows the moving force to act parallel and horizontal to the inclined plane.			
24.	— do. Weinhold, Fig. 63, serves at the same time for measuring the pressure of the charge upon the inclined plane	3.	3.	—
25.	— Krebs, Fig. 82	2.	15.	6
	With this apparatus the moving force and the pressure of the charge upon the way are not measured by weights, but by spring-balances.			



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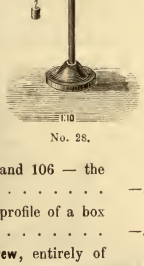
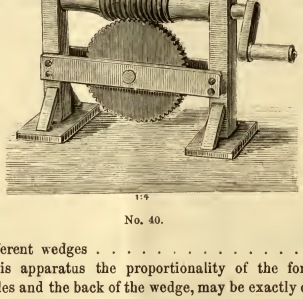


No. 28.

26.	**Mechanism for explaining the screw** — Frick, Fig. 105 and 106 — the screw with one or several turns	—.	2.	6
27.	— Pattern of a screw with sharp or flat turn and with profile of a box — made of wood	—.	3.	—
28.	**Apparatus for the demonstration of the action of a screw,** entirely of metal, with a screw	1.	14.	6
29.	— do. with two screws of different grades	2.	1.	6
	This modification of Müller's Apparatus (Frick, Fig. 107) allows to measure much more exactly and also of using screws of different grades.			
	Mechanisme for explaining the various applications of a screw — made of metal.			
30.	— a fixed screw-box with a turning and progressive worm	—.	17.	6
31.	— a turning worm with a progressive box	1.	9.	—
32.	— a fixed worm with a turning and progressive box	—.	17.	6
33.	— a turning box with a progressive worm	1.	9.	—
34.	— these 4 apparatus 30 to 33 together	4.	—.	6
35.	**Model of a Screw-Press,** of metal. Müller-Pouillet I. Fig. 45	1.	9.	—
36.	— do. more simple and of wood	—.	17.	6
37.	**Model of a Hunter's Screw-Press,** of metal	2.	1.	6

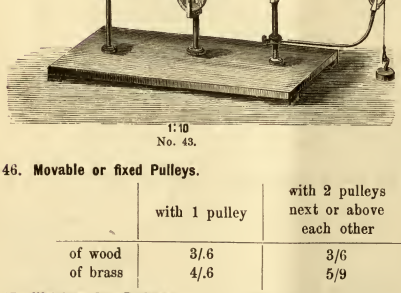
	£	Sh.	d.
38. **Model of an Archimedic Screw.** — Frick, Fig. 110	1.	3.	—
39. — do. simpler, the screw consists of a wound glass-tube	—.	10.	6
40. **Screw and Wheel,** of wood	—.	9.	—
41. — do. of metal	1.	3.	—
42. **Apparatus for demonstrating the principles of the Wedge.** — Frick, Fig. 112	—.	14.	—
43. — do. new construction with wedge see illustration No. 43	3.	2.	6



1:9

No. 40.

44. — do. with 2 different wedges	3.	9.	—
With this apparatus the proportionality of the forces acting upon the sides and the back of the wedge, may be exactly determined.			
45. — do. Richter's	1.	3.	—



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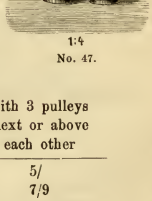
No. 43.



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No. 47.

46. **Movable or fixed Pulleys.**

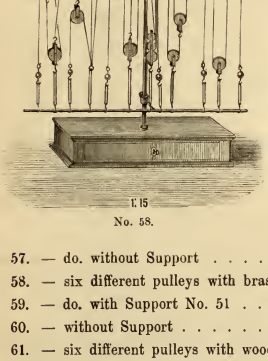
	with 1 pulley	with 2 pulleys next or above each other	with 3 pulleys next or above each other
of wood	3/.6	3/6	5/
of brass	4/.6	5/9	7/9

47. **Weights for Pulleys:** 1 Set containing, 6 holders of one ounce, 10 of $^1/_2$ ounce, 2 of $^2/_3$ ounce, 2 of 2 ounces, 1 of 4 ounces — the weights are of brass and contained in a box	1.	1.	—
48. — Weights of lead without box	—.	11.	6
49. **Scales for Pulleys**	—.	2.	—

	£	Sh.	d.
50. **Support for Pulleys** — upon wood-box	1.	14.	6
51. — do. upon iron-stand	—.	17.	6
52. — do. same, but smaller	—.	12.	—
53. — Simple Support for Pulleys, scales etc. — with a movable horizontal arm to be screwed to a table	—.	8.	6

Pulleys

54. — four different with brass-pulleys and Stand No. 52	2.	12.	—
55. — do. without stand	2.	1.	6
56. — four different with wood pulleys and Support No. 52	1.	14.	6



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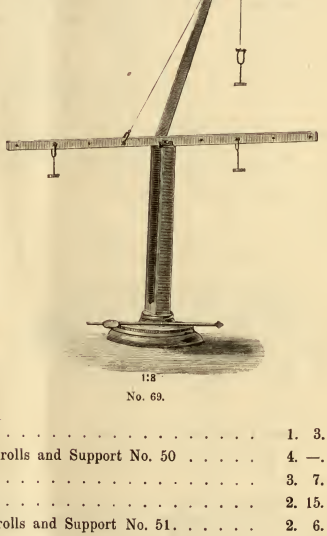
No. 58.



1:8

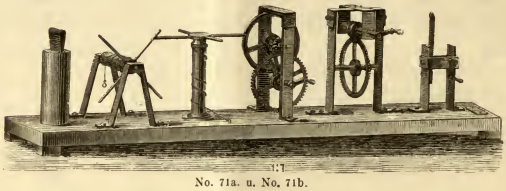
No. 69.

57. — do. without Support	1.	3.	—
58. — six different pulleys with brass-rolls and Support No. 50	4.	—.	6
59. — do. with Support No. 51	3.	7.	—
60. — without Support	2.	15.	6
61. — six different pulleys with wood-rolls and Support No. 51.	2.	6.	—
62. — do. without Support	1.	12.	—
63. — Differential-Pulley of metal upon Support	1.	14.	6
64. — do. of wood upon Stand	1.	1.	—
65. **Lever-Apparatus** — Frick, Fig. 130	—.	8.	6
66. — do. — Frick, Fig. 129	—.	17.	6
67. — do. — Frick, Fig. 125	1.	8.	—
68. — do. with movable axis	2.	12.	—
69. — do. Bertram's, with tongue to screw on or off, entirely of metal	1.	9.	—
70. — do. new construction, on a case with drawer	2.	17.	6

£ Sh. d.

Lever-Apparatus

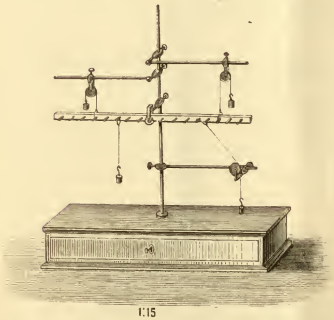
71. — do. Tschechowitch's. -- Carl's Repert. XII pg. 405 — Combined with a mechanism to demonstrate the parallelogram of forces . . . . . 4. 12. —



No. 71a. u. No. 71b.

71a. **Mechanic Powers,** sz. draw-beam, endless scew, wheel and pinion, reel, capstan and simple wedge, made of brass and placed on one same board . . . . . 2. 12. —

71b. — do. same, made of wood . . . . . 1. 15. —



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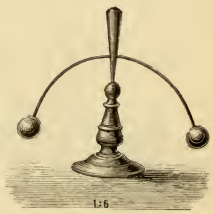


No. 77.

72. **Wheel on the axle** — of metal . . . . . —. 13. 9

73. — do. with stand . . . . . —. 17. 6

74. — do. of wood. . . . . —. 6. 3

75. **Equilibrium-Figures** with centre of gravity constructed thereon: circle, triangle, quadrate, pentagon of brass, with caps for placing them upon a pointed stand, support included . . . . . —. 17. 6

76. — do. of wood to be suspended at threads . . . . . —. 5. 9

77. **Mechanism for explaining the stable equilibrium** — Frick, Fig. 134 . . . —. 6. 3

78. **Mechanism for explaining the indifferent, stable and variable equilibrium** . —. 2. 3

79. — do. with stand. . . . . —. 3. 6

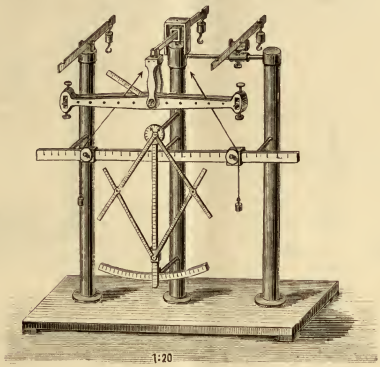
80. **Cone running up-hill** . . . . . —. 4. 3

81. **Cylinder running up-hill**. . . . . —. 5. 9

82. **Chinese Stair-climber**. . . . . —. 3. 6

83. — do. larger . . . . . —. 6. 9

	£	Sh.	d.
84. **Model of a Cardanish Suspension**	—.	17.	6
85. **Apparatus for determining the stability** – Frick, Fig. 137	1.	9.	—
86. — do. without adjusting-screws	—.	17.	6
87. — do. Steinhäuser's with 3 prisms. — Müller-Pouillet I. Fig. 66—68	1.	1.	—



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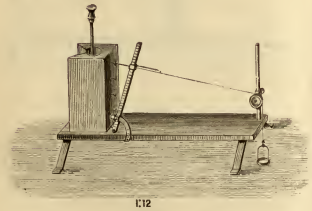
No. 71.

88. — do. Weinhold, Fig. 69	1.	1.	—
89. — do. Kajetan's — Carl's Rep. XIII. pg. 420	2.	6.	—
90. **Oblique Tower** for illustrating the principle on which the Tower of Pisa is built	—.	2.	3



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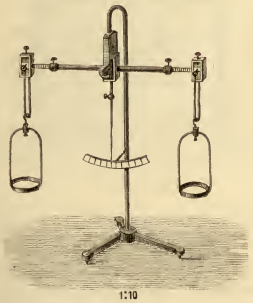
No. 89.



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No. 93.

91. — do. larger, with plummet	—.	4.	9
92. **Modell of a beam of a balance** — Weinhold, Fig. 70—73	—.	16.	3
93. — Demonstrating Balance	2.	17.	6

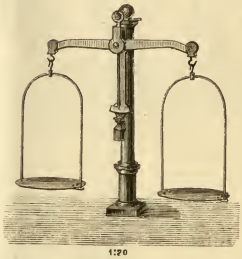
This apparatus shows all various relations, which may influence upon the sensitiveness and good quality of a balance.

£ Sh. d.

Balances or Scales:

94. — Hand-Scale with brass-beam and corn-scales . . . . . 3/6. to 11/6
95. — Column-Scales, at prices varying to the sensitiveness . . . . . 1,3,— to 5,15,—
96. — Chemical Balances, at prices varying according to sensitiveness and capacity of bearing from . . . . . 1,10 to 50. —. —
Hydrostatic Scales, see Hydrostatic Weights.

1:10
No. 94.

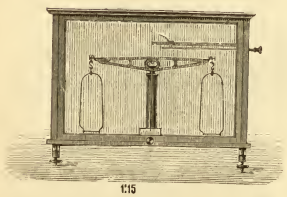


1:20
No. 95.

97. — Weights in sets, the larger of brass, from one gramm to one milligramm of platine, with tweezers, and centigramm-chrochet in a mahogany-box, from 1 Grain up to

	1	2	4	8	16	32 Ounces
£	1.3.—	1.12.—	2.—.6	2.17.6	3.14.9	4.12.—

98. — 1 Set from 1 milligramm to 1 gramm, of platine, with box . . . . 1. —. 3



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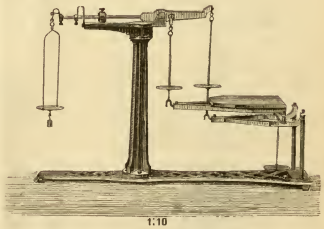
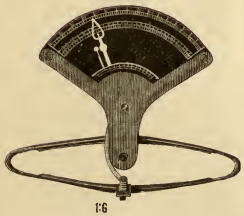
No. 96.



1:10
No. 105

99. — 1 Set from 1 milligramm up to 1 kilogramm, of brass in polished wood-block 1. 3. —
100. — 1 Set from 1 gramm up to 500 gramm, of brass in polished wood-block —. 17. 6
101. — 1 Set from 1 centigramm up to 200 gramm, of brass in polished wood-block —. 11. 6
102. **Model of an Unequal-armed balance.** — Frick, Fig. 141 — of wood. . . —. 9. 3
103. — do. iron-made . . . . . —. 13. 9
104. — do. brass-made . . . . . 1. 1. —
105. **Model of a weigh-bridge,** entirely of metal . . . . . 1. 15. —
106. — do. simpler, wood made. . . . . —. 17. 6
107. **Mechanism for demonstrating the elasticity of ivory** — Frick, Fig. 143 — —. 13. 9
108. **Glass-Tuft** of spun-glass . . . . . —. 1. 3

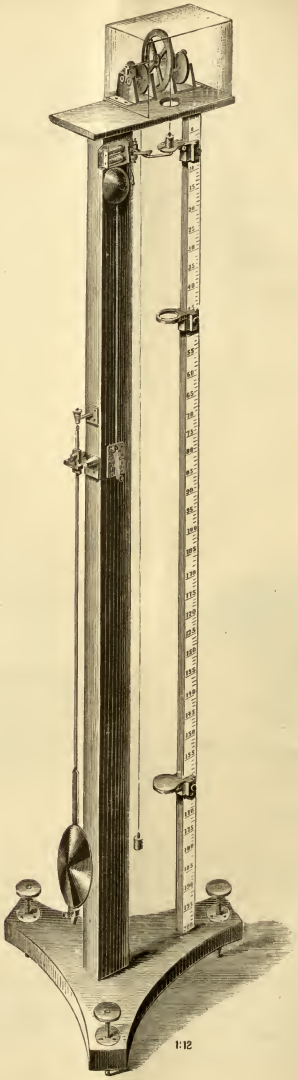
		£	Sh.	d.
109.	**Bolognian-Flasks** . . . . . 10 pieces	—.	2.	—
110.	**Glass-Tears** . . . . . 25 pieces	—.	1.	6
111.	**Joly's Spring-Steelyard.** — Müller-Pouillet I. Fig. 77	1.	9.	—
112.	— do. simple	—.	5.	9
113.	**'S Gravesande's Apparatus for determining the elasticity of metal-wires.** — Müller-Pouillet I. Fig. 75	1.	3.	—
114.	— do. simpler	—.	11.	6
115.	**Dynamometer**, simple pattern. — Eisenlohr, Fig. 30.	—.	13.	9
116.	— do. larger	1.	9.	—
117.	— do. for traction and pressure	2.	12.	—
118.	**Coulomb's Turning Balance** for Researches about Elasticity by torsion and adhesion	1.	9.	—
119.	— do. larger and with adjusting-screws, the scale edged on the glass .	2.	17.	6
120.	— do. with reading-mirror for exact measurings (Fig. No. 119)	4.	6.	3



1:6
No. 117

1:7
No. 119.

121.	**Adhesive Glass-Plates**	—.	6.	9
122.	— do. of brass	—.	16.	3
123.	— Support for these plates — Frick, Fig. 148	—.	10.	6
124.	**Galilei's Falling-Channel** to be risen or lowered, with metronome	2.	1.	6
125.	— do. without metronome	1.	7.	9
126.	**Atwood's Fall Machine**, with sheaves, electromagnetic ratch, second's pendulum and electro-magnetic second's stroke	13.	16.	—
127.	— do. but without sheaves.	11.	5.	—
128.	— without sheaves, with second's pendulum, perceptible stroke, the ratch is automatically loosened through the pendulum	7.	10.	6
129.	— quite simple, upon alder-wood stand with pendulum, the ratch is automatically loosened	4.	7.	6
130.	— do. like 129, but without pendulum	3.	10.	—



No. 126.

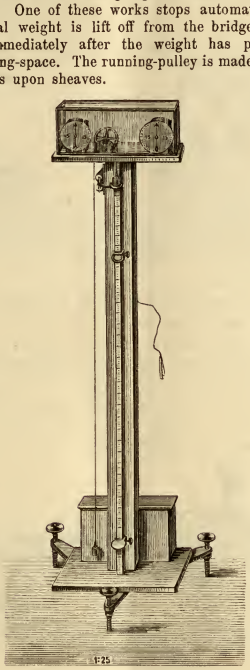
£ Sh. d.

Atwood's Fall Machine

131. — do. Weinhold's, Fig. 58 . . . . . 2. 15. 6

132. — new construction, with electromagnetical loosening, with two registering clock-works and two Leclanché-Elements . . . . . 17. 5. —

Immediately after the weight being loosened by the electromagnet, the clock-works are going on. Each of them bears a second's index. One of these works stops automatically as soon as the aditional weight is lift off from the bridge. The second work stops immediately after the weight has passed through the limited falling-space. The running-pulley is made of aluminium-silver and rests upon sheaves.



No. 132.

133. **Müller's Fall Machine.** — Müller-Pouillet I. Fig. 339 — for the graphic demonstration of the laws of fall 8. 12. 6

A swinging spring is writing with a lead-pencil upon a freely falling paper. The sledge and the spring ave loosened simultaneously by electromagnetic force.

134. **Apparatus for demonstrating the Fall upon arc and chord** — Frick, Fig. 306 — 1. 14. 6

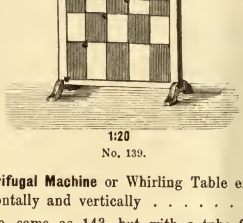
135. — do. new construction, with 2 bells indicating the end of the falling times. The chord can be adjusted, both balls are loosened simultaneously 2. 12. —

136. **Apparatus for showing the fall upon various curved lines** . . . . . 1. 9. —

137. — do. new construction, with 3 bells, the balls are loosened simultaneously 2. 6. —

138. — do., Weinhold's Fig. 64 . . . . . —. 17. 6

		£	Sh.	d.
139.	**Apparatus for demonstrating the parabolic fall** of Projectiles. — Frick Fig. 277	1.	9.	—
140.	— do. larger	2.	6.	—
141.	— do., Hagenbach's. — Carl's Rep. III pg. 441	—.	17.	6
142.	**Loewy's Apparatus for showing the simultaneous fall of a body thrown in horizontal line and one falling freely** — Weinhold, Fig. 60	—.	16.	3



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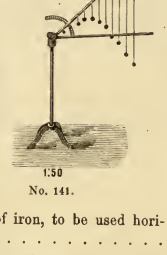
No. 139.



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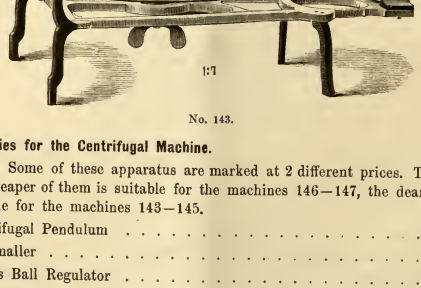
No. 141.

143.	**Centrifugal Machine** or Whirling Table entirely of iron, to be used horizontally and vertically	2.	12.	—
144.	— do. same as 143, but with a tube for fixing a throttle-valve-model or Watts Steam engine regulator	3.	3.	3
145.	— do. same as 144, with a longer axle and with folding-feet. An arrangment is provided in the middle upon which parts of fixed apparatus may be placed	4.	12.	—
146.	— do. Bertram's, to be used only horizontally	1.	5.	3
147.	— do. with arrangment for experimenting with a throttle-valve-model et cet.	1.	9.	—



1:7

No. 143.

Accessories for the Centrifugal Machine.

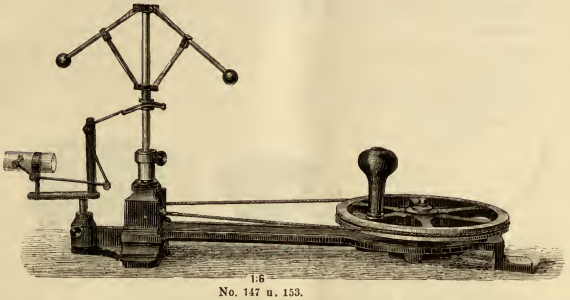
Some of these apparatus are marked at 2 different prices. The cheaper of them is suitable for the machines 146—147, the dearer one for the machines 143—145.

148.	— Centrifugal Pendulum	—.	13.	9
149.	— do. smaller	—.	5.	9
150.	— Watt's Ball Regulator	—.	17.	6
151.	— do. smaller	—.	9.	—
152.	— do. with a throttle-valve-model, but only suitable for the Centrifugal Machine No. 144 a. 145	1.	6.	—
153.	— do. smaller, suitable only for the Centrifugal Machine No. 147	—.	15.	—

£ Sh. d.

Accessories for the Centrifugal Machine.

154. — Two brass-balls of different weights, connected together and sliding on a horizontal wire . . . . . —. 8. 6
155. — do. smaller . . . . . —. 4. 9



No. 147 u. 153.

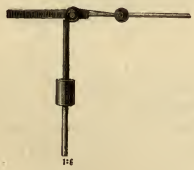
156. — Ball Weighing 100 Grammes, sliding in a horizontal-line with spring-balance for reading directly the centrifugal force . . . . . —. 17. 6
157. — do. smaller . . . . . —. 8. 6
158. — Centrifugal Balance — Frick, Fig. 287 . . . . . —. 16. 6

No. 154.

No. 158.

No. 164.

159. — do. smaller . . . . . —. 9. 9
160. — Ball weighing 100 Grammes and sliding in horizontal line, different weights can be lifted vertically . . . . . —. 15. 6
161. — do. smaller . . . . . —. 6. —



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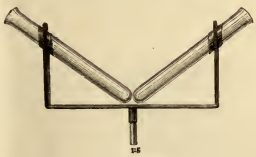


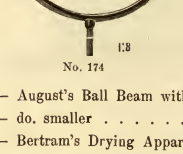
No. 166.

162. — Apparatus for showing, that the centrifugal force depends on the velocity of rotation and the size of the radius of gyration — Frick's, Fig. 289 . . . . . —. 17. 6
163. — do. same smaller. . . . . —. 8. 3
164. — August's Spring-Drawer. . . . . —. 13. 9
165. — do. smaller . . . . . —. 5. —
166. — Two tubes inclined to another for liquids of different specific gravity —. 6. —

£ Sh. d.

Accessories for the Centrifugal Machine continued.

167. — do., smaller . . . . . —. 4. 6
168. — Glass-Ballon, to be filled with water and mercury. . . . . —. 9. 6
169. — do. smaller . . . . . —. 4. 6
170. — Glass-Bottle to show the parabolic surface . . . . . —. 6. 6
171. — do. smaller . . . . . —. 3. —
172. — August's Swinging Siphon. . . . . —. 10. 6
173. — do. smaller . . . . . —. 4. 6
174. — Semicircular Chanel with two freely running balls . . . . . —. 8. 6
175. — do. smaller . . . . . —. 5. 3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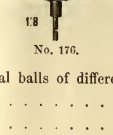
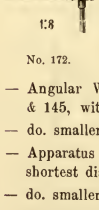

No. 176.


No. 178.

176. — August's Ball Beam with several balls of different weight . . . . . —. 10. —
177. — do. smaller . . . . . —. 4. 6
178. — Bertram's Drying Apparatus . . . . . —. 13. 9
179. — do. smaller . . . . . —. 7. 9
180. — Bertram's Apparatus for washing minerals . . . . . —. 15. 6
181. — do. smaller . . . . . —. 9. —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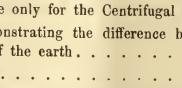
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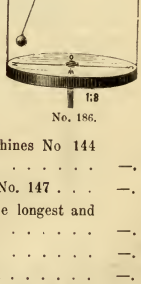
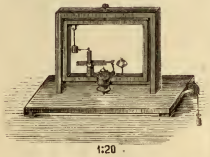

No. 186.

182. — Angular Weels, to use only with the Centrifugal Machines No 144 & 145, with arrangments for attaching coloured discs . . . . . —. 16. 6
183. — do. smaller, suitable only for the Centrifugal Machine No. 147 . . . —. 11. 6
184. — Apparatus for demonstrating the difference between the longest and shortest diameter of the earth. . . . . —. 15. —
185. — do. smaller . . . . . —. 7. —
186. — Apparatus for explaining Foucault's essay of pendulum . . . . . —. 16. —
187. — do. smaller . . . . . —. 6. —
188. — Ring, Cylinder and Chain. . . . . —. 5. 9
189. — do. smaller . . . . . —. 2. 6

Accessory apparatus to the centrifugal-machine, which belong to other parts of Physics — are marked at the respective chapters.

		£	Sh.	d.
190.	**Schleiermacher's Apparatus for showing, that the centrifugal force is proportionate to the square of the velocity of rotation** — Frick, Fig. 286	2.	6.	—
191.	**Centrifugal Railway** with ball	—.	17.	6
192.	— do. with carriage	2.	1.	6
193.	**Busolt's top with swinging-engine**	1.	9.	—
194.	— do. Weinhold's, Fig. 56	2.	15.	3
195.	— do. Schmidt's. Weinhold, Fig. 82	—.	10.	6
196.	— do. larger	—.	17.	6



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No. 190.

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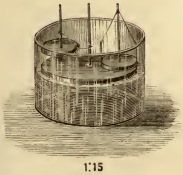
No. 200.

197.	**Bohnenberger's Machine**	1.	1.	—
198.	— do. larger	1.	14.	6
199	— improved by Poggendorff, with swinging engine — Eisenlohr, Fig. 91	4.	6.	3
200.	**Fessel's Gyroscop**	—.	17.	6
201.	— do. larger	1.	9.	—



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No. 203.

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No. 207.

202.	**Magnus's Polytrop**	7.	18.	—
203.	**Mach's Apparatus for illustrating the principles, by which the centre of gravity and the surfaces are obtained.** — Carl's Rep. IV. pg. 360	1.	3.	—
204.	**Mechanism for Foucault's Pendulum-Essay** — Frick, Fig. 302—305 with graduated disc	2.	—.	3
205.	— do. Weinhold's, Fig. 89 & 90	5.	15.	—
206.	— do. Eisenlohr, Fig. 85	2.	6.	—
207.	**Apparatus for explaining the moment of inertia**	—.	8.	6
208.	**Kurz's Apparatus for determining the moment of inertia** — Müller-Pouillet I. Fig. 384 — upon stand	2.	12.	—
209.	— do. other construction, consisting of two balls suspended on threads of different weight with springhammer in the larger ball — upon Stand with sextant	1.	9.	—

		£	Sh.	d.
210.	**Apparatus for demonstrating the laws of Pendulum,** simple making, with three pendula	—.	7.	6
211.	— do. new construction, with 6 pendula	—.	17.	6
212.	— do. Frick, Fig. 308	2.	1.	6
213.	**Mach's Pendulum Apparatus** fitted in such manner, that the plane of the pendulum can be inclined to any wished angle	1.	9.	—
214.	**Wiedemann's Apparatus for showing, how the resistance of air influences upon the pendulum,** with support. Frick, Fig. 321 —	—.	6.	6

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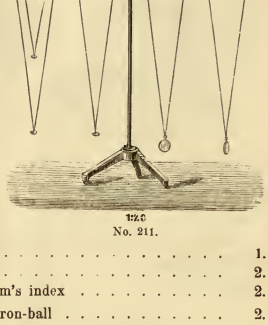
No. 210.



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No. 211.

215.	**Second's Pendulum upon support**	1.	7.	9
216.	— do. with audible stroke	2.	1.	6
217.	— do. with audible stroke and secundum's index	2.	17.	6
218.	**Convertible Pendulum** upon stand, with iron-ball	2.	17.	6
219.	— do. the ball's of brass and filled with lead	2.	12.	—

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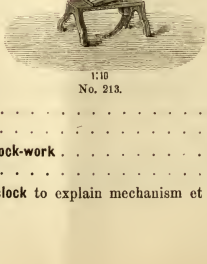
No. 209.



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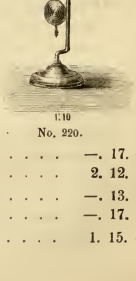

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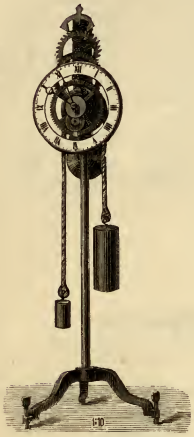
No. 220.

220.	**Grit-Pendulum upon Stand**	—.	17.	6
221.	— do. swinging seconds	2.	12.	—
222.	**Maelzel's Metronome with clock-work**	—.	13.	9
223.	— do. with ball	—.	17.	6
224.	**Open Model of a pendulum-clock** to explain mechanism et cet.	1.	15.	—

£ Sh. d.

Open Model of a Pendulum-clock

225. — do. with adjusting screws . . . . . 2. 2. —



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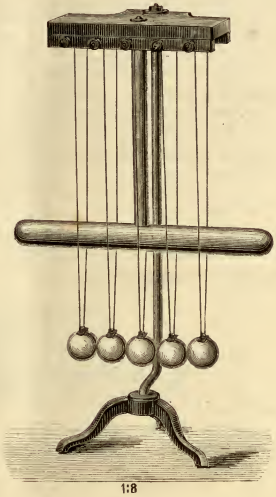

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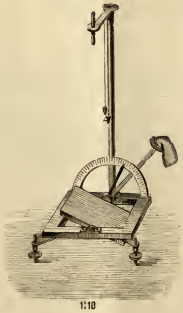
No. 231.

226. — do. The index-work can he easily taken away. It is supplied with a contact-mechanism, by means of which it can be connected with an electric dial 2. 17. 6



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No. 237.

227. **Modell of an escapement by anchor,** with weight 1. 14. 6

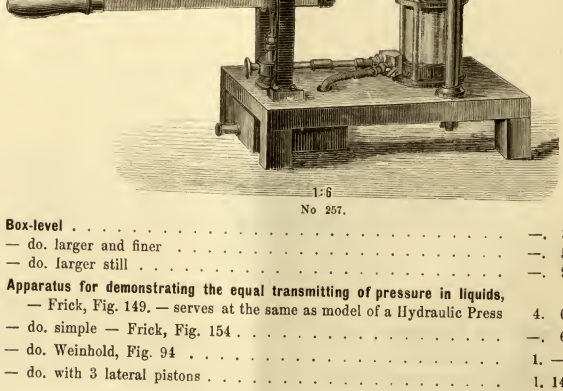
228. — do. with spring 2. 1. 6

229. **Model of a chronometric escapement** with spring . . . . . 2. 12. —

		£	Sh.	d.
230.	**Model of a escapement by cylinders** with spring	2.	12.	—
231.	**Apparatus of Percussion** with 5 box wood	—.	13.	9
232.	— do. with 10 boxen balls	1.	1.	—
233.	— do. with 9 box wood of different weight	1.	14.	6
234.	— do. with 5 ivory balls and 5 lead balls	2.	15.	6
235.	— do. with 10 ivory-balls of same weight and 3 box wood of different weight, the points of suspension and the sextants are moveable.	5.	3.	6
236.	**Apparatus of reflexion** — Frick, Fig. 328	—.	17.	6
237.	— do. Nollet's, the ivory-ball is falling in a vertical line	2.	12.	—
238.	— do. the ivory-ball is thrown horizontally	2.	6.	—
239.	**Coulomb's tribometer** for sliding friction — Müller-Pouillet I. Fig. 304	1.	9.	—
240.	— do. more complete	2	1.	6
241.	— do. for rolling friction — Muschenbrock's and Nollet's construction — Frick, Fig. 329	2.	12.	—
242.	**Kommerell's Apparatus for demonstrating the effect of friction upon inclined planes,** — Frick, Fig. 330	—.	5.	9
243.	**Prony's dynamometrical break**	1.	14.	6

B. Hydrostatics and Hydrodynamics.

244.	**Tube-level** in brass-frames	—.	3.	6
245.	— do. with adjusting-screw and scale	—.	10.	3
246.	— do. Weinhold's, Fig. 92 — special pattern for schools	—.	14.	3



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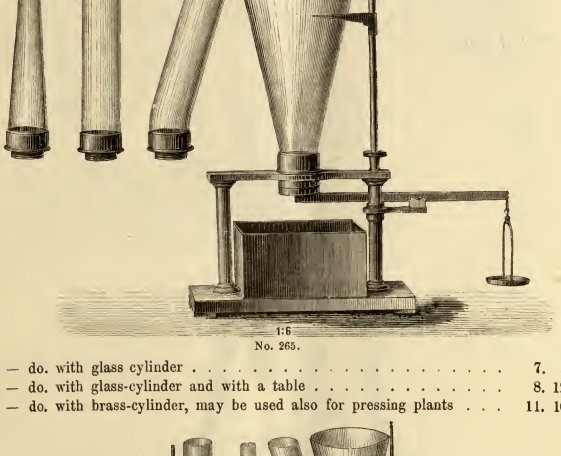
No 257.

247.	**Box-level**	—.	3.	—
248.	— do. larger and finer	—.	5.	6
249.	— do. larger still	—.	9.	3
250.	**Apparatus for demonstrating the equal transmitting of pressure in liquids,** — Frick, Fig. 149. — serves at the same as model of a Hydraulic Press	4.	6.	3
251.	— do. simple — Frick, Fig. 154	—.	6.	3
252.	— do. Weinhold, Fig. 94	1.	—.	6
253.	— do. with 3 lateral pistons	1.	14.	6

		£	Sh.	d.
	Apparatus for demonstrating the equal transmitting of pressure in liquids			
254.	— do. with 5 little monometers	1.	—.	6
255.	**Hydraulic Press giving a pressure of 300—500 Kilos**, with iron cylinder	4.	6.	3
256.	— do. with brass cylinder	5.	15.	—



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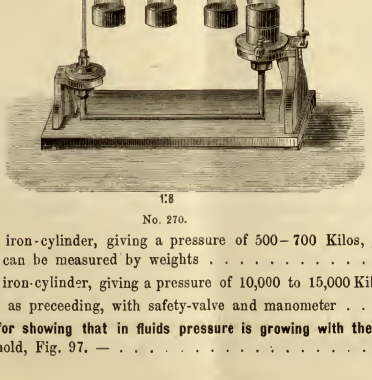
No. 265.

257.	— do. with glass cylinder	7.	3.	6
258.	— do. with glass-cylinder and with a table	8.	12.	6
259.	— do. with brass-cylinder, may be used also for pressing plants	11.	10.	—



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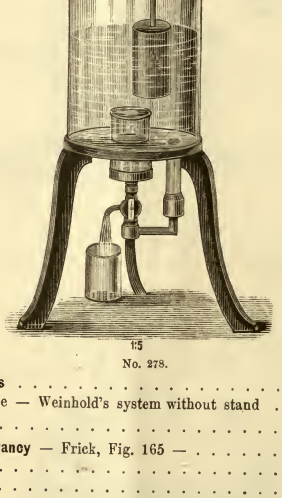
No. 270.

260.	— do. with iron-cylinder, giving a pressure of 500—700 Kilos, — the pressure can be measured by weights	20.	2.	6
261.	— do. with iron-cylinder, giving a pressure of 10,000 to 15,000 Kilos, —	51.	15.	—
262.	— do. same as preceeding, with safety-valve and manometer	57.	10.	—
263.	**Mechanism for showing that in fluids pressure is growing with the depth** — Weinhold, Fig. 97. —	—.	8.	9

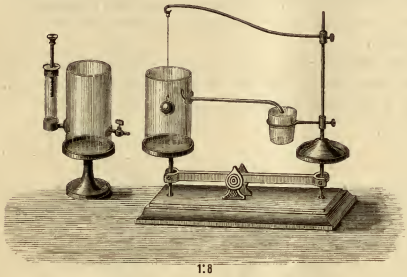
		£	Sh.	d
264.	**Pascal's Apparatus for measuring the pressure of ground,** with 4 different tops	1.	8.	6
265.	— do., same, larger	2.	12.	—
266.	— do. Müller's — Müller-Pouillet, Fig. 147, with 3 different vessels without scale	1.	8.	6
267.	— do. with scale placed on one same board	3.	9.	—
268.	— Frick's, Fig. 161, with 3 different vessels, without scale	2.	2.	—
269.	— do. same with scale on one same board	4.	—.	—
270.	— do. Haldat's — Frick, Fig. 164, with 4 different vessels	2.	12.	6
271.	**Model of Real's Press**	—.	17.	3
272.	— do .larger	1.	15.	—



No. 273.

273.	**Hydrostatic Bellows**	—.	17.	3
274.	— do. more simple — Weinhold's system without stand	—.	5.	—
275.	**Anatomical Siphon**	—.	4.	—
276.	**Illustration of buoyancy** — Frick, Fig. 165 —	—.	2.	9
277.	— do. larger	—.	5.	—
278.	— do. Vogel's	1.	14.	6
	A detailed description will be sent on demand.			
279.	**Apparatus for proving the Archimedic principle,** consisting of a glass-vessel with lateral discharge and swimmer — Frick, Fig. 170 —	—.	9.	—.
280.	— do. with a graduated glass-vessel	—.	10.	6
281.	— do. Sire's, with upper-scale balance. — Carl's Rep. X pag. 451	2.	11.	6
282.	— do. consisting of a hollow and a massive cylinder. — Müller-Pouillet I., Fig. 158.	—.	5.	6
283.	— do. larger	—.	8.	9
284.	— do. consisting o fa hollow and a massive cube, each side about $1^1/_6$ inch	—.	13.	9
285.	— do. each side is 2 inch large	1.	—.	6
286.	**Mechanism for showing, that a solid body can only swim, when it is pressed from beneath by the fluid.** — Weinhold's Fig. 103	—.	3.	—

		£	Sh.	d.
287.	**Cartesian Swimmer**	—.	1.	9
288.	do. larger	—.	2.	6
289.	**Hydrostatical Balance with brass-beams,** with two long and one short brass-scale suspended to wires	1.	12.	6
290.	— do upon stand	2.	1.	6



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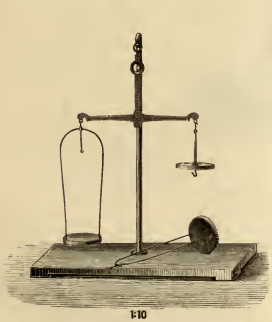
No. 281.

1:4
No. 283.

291.	— do. Mohr's for determining the specific gravity of fluids, complete in a box	2.	11.	6
292.	— Westfahl's scale with one branch for determining the specific gravity of scales	2.	11.	6
293.	**Nicholson's Weight Areometer,** made of varnished tin-plate	—.	5.	6
294.	— do. brass-made	—.	17.	3



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No. 290.

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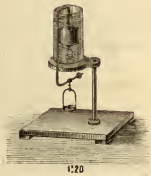
No. 294.



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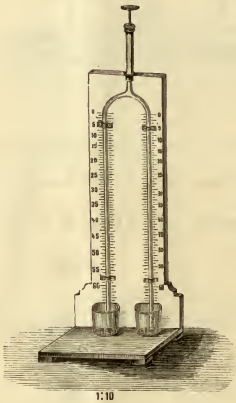
No. 297.

295.	— do of gilt brass with weights and a glass-cylinder in leather-box	2.	1.	3
296.	— do. Tralle's of varnished tin-plate with glass and support — Weinhold's, Fig. 104	1.	—.	—
297.	— do. brass-made	1.	8.	6
298.	**Graduated Areometers for liquids the specific gravity of which is lighter than water**	—.	4.	—
299.	— do. with thermometer fused into the glass	—.	5.	6
300.	— do. for liquids, the specific gravity of which is heavier than water	—.	4.	—

		£	Sh.	d.
	Graduated Areometers			
301.	-- do. with thermometer fused into the glass	—.	5.	6
302.	— Universal-Areometer for liquids of 0,700 to 2000 specific gravity	—.	5.	6
303.	— Wittstock's Areometric Case containing two areometers with weights, thermometer and glass-cylinder in a box	2.	11.	6
304.	— Trall's Alcoholometer from 0—100° with thermometer fused into the glass. Areometers are supplied for any special purposes and with any desired scales.	—.	6.	—
305.	**Twenty Glass-Balls of different weight,** swimming on the surface or sinking down and thus indicating the specific gravity of liquids	1.	3.	—
306.	**Cold-Water-Swimmer.** A Metal-Ball which swims on cold water and sinks down in warm water	—.	2.	9
307.	— do. larger	—.	4.	6



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No. 320.

308.	**Element-Glass,** containing four not mixing liquids of different specific gravity	—.	5.	6
309.	**Gramm-Glasses** with ground stopper	—.	3.	6
310.	— do. with a thermometer fused into the glass	—.	8.	9
311.	— do. with a hollow glass-stopper	—.	5.	—
312.	— Weinhold's Picnometer, Fig. 51, with tripod-stand and pipette	—.	2.	9
313.	**Communicating Vessels,** Frick, Fig. 166	—.	1.	9
314.	— do. one System of three tubes of different width and bent on different manner, upon wood support	—.	2.	6
315.	— do. with 4 tubes	—.	5.	—
316.	**Channel-Scale** — simple pattern for schools	—.	17.	3
317.	— do. larger and upon stand	1.	8.	6
318.	**Apparatus for determining the specific gravity of liquids,** consisting of a tube bent in the form of an U, with graduated stand — Frick, Fig. 167	—.	12.	—
319.	— do. Babinet's, consisting of a tube bent in form of two U, with glass-stopcock and graduated support. — Müller-Pouillet I., Fig. 134.	1.	1.	—

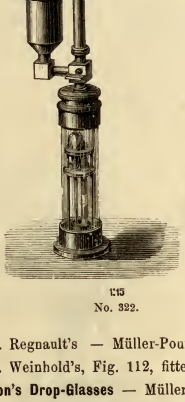
£ Sh. d.

Apparatus for determining the specific gravity of liquids

320. — do. Boyle's, consisting of two vertical tubes upon graduated stand with one common pump . . . . . 1. —. 6

321. — do. Mohr's, with Rubber-ball instead of the pump . . . . . —. 13. 6

322. **Oerstedt's Apparatus for demonstrating the compressibility of liquids,** with picnometer and air-manometer — Frick, Fig. 156 — 6. 12. 3



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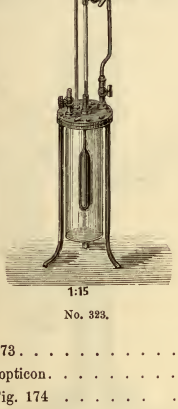
No. 322.



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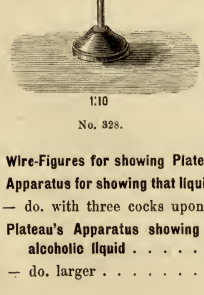
No. 323.

323. — do. Regnault's — Müller-Pouillet I., Fig. 173 . . . . . 6. 8. 6

324. — do. Weinhold's, Fig. 112, fitted for the Sciopticon. . . . . 2. 6. —

325. **Salleron's Drop-Glasses** — Müller-Pouillet I., Fig. 174 . . . . . —. 1. 3



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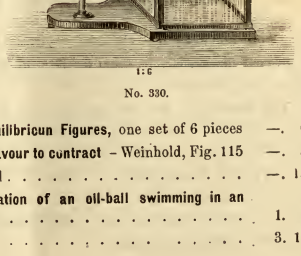
No. 328.



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No. 330.

326. **Wire-Figures for showing Plateau's Equilibricun Figures,** one set of 6 pieces —. 6. —

327. **Apparatus for showing that liquids endeavour to contract** – Weinhold, Fig. 115 —. 5. —

328. — do. with three cocks upon a stand . . . . . —. 13. 6

329. **Plateau's Apparatus showing the rotation of an oil-ball swimming in an alcoholic liquid** 1. 8. 6

330. — do. larger 3. 11. 6

£ Sh. d.

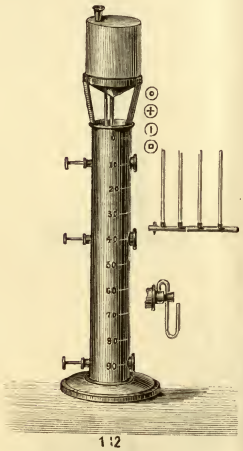
Plateau's Apparatus showing the rotation of an oil-ball swimming in an alcoholic liquid

331. — do. with clock work . . . . . 3. 9. —

332. **Four plain plates of glass, wood, copper and brass,** each with three threads for suspending at a scale, for measuring the coherence of liquids . . . . . —. 4. 3

333. **Capillary-Tubes,** 10 pieces of different width, with graduated stand . . . —. 8. 9

334. — do. two larger tubes, each of which is connected with three capillary-tubes of different width, for moistening and not moistening liquids, new construction, with graduated stand . . . . . —. 11. 6



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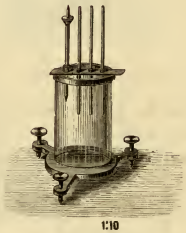
No. 337.



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No. 352.

335. **Apparatus for essays about capillarity,** consisting of two hinged glass-plates with glass-vessel . . . . . —. 13. 6

336. — do. with micrometric-screw . . . . . 1. 3. —

337. **Gay Lussac's Apparatus for measuring capillary attraction.** — Müller-Pouillet I., Fig. 187 . . . . . 1. 8. 6

338. — do. Pfaundler's. — Müller-Pouillet I., Fig. 188 . . . . . 1. 14. 6

339. **Conical Glass-Tube, to show the form of the Meniscus** . . . . . —. 2. 3

340. — Two-side-tube for same essay . . . . . —. 2. —

341. **Two Glass-Balls and two wax-balls** for the essays about attraction and repulsion produced by capillarity . . . . . —. 5. —

342. — 2 plates of thin plate-glass for same essays, suspended on threads —. 2. 3

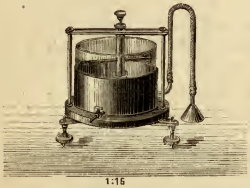
343. **Dutrochet's Endosmometer.** — Müller-Pouillet I., Fig. 212 . . . . . —. 3. —

344. — do. with graduated rising-tube . . . . . —. 4. 3

345. — do. with horizontal tube — Weinhold, Fig. 120 — not graduated . . —. 3. —

346. — do. with graduated scale . . . . . —. 5. 6

		£	Sh.	d.
347.	**Apparatus for demonstrating, how evaporation influences upon endosmosis,** consisting of two bent tubes. — Müller-Pouillet I., Fig. 214 u. 215	—.	2.	9
348.	**Apparatus for the essays about the velocity of the efflux of fluids,** Weisbach's system, with three discharging-tubes	1.	—.	6
349.	— do. with stuffing-box. — Müller-Pouillet I., Fig. 412	2.	11.	6
350.	— do. with stuffing-box, fitted for maintaining a constant level	3.	9.	—
351.	— do. complete with different connecting tubes, orifices of discharge of different forms et cet., with arrangement for obtaining a constant level	8.	12.	6
352.	— do. same as 351, but larger, the adjoined tubes are connected with manometers	11.	10.	—
353.	— Mariotte's Vessel for same essays — Müller-Pouillet I., Fig. 413	—.	13.	6
354.	— do. with different adjoined tubes and orifices of discharge	1.	14.	6



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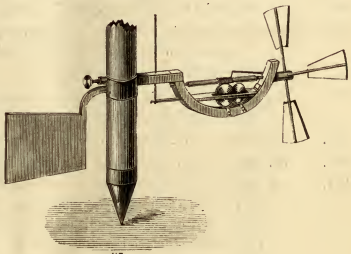
No. 365.



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No. 366.

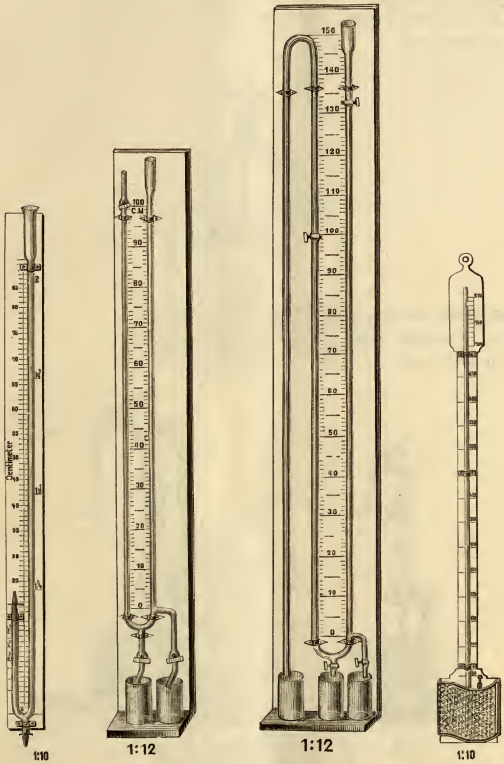
355.	— discharging Apparatus — Weinhold, Fig. 105 — for same essays	—.	17.	3
356.	— do. with arrangement for showing how pressure changes, when water is flowing trough long pipes	1.	5.	9
357.	**Apparatus for demonstrating the parabolic fall of fluids**	2.	17.	6
358.	— do. with arrangement for maintaining a constant level	3.	9.	—
359.	**Hydraulic Ram**, entirely of glass — Weinhold, Fig. III B	—.	8.	9
360.	— do. of metal and glass — Weinhold, Fig. III A	2.	11.	3
361.	**Poisseuille's Apparatus for examining the efflux of fluids through capillary tubes.** — Müller-Pouillet I., Fig. 432	—.	5.	6
362.	**Segner's Water-Wheel,** simple, — Frick, Fig. 338	—.	6.	9
363.	— do. of varnished tin-plate	—.	12.	6
364.	— do. of glass, with brass-furniture	1.	3.	—
365.	— do. Carl's, serving at same time as a reaction-wheel for gases. — Carl's Rep. IV. pag. 118	2.	6.	—
366.	**Woltmann's Hydrodynamic Wing,** for measuring the rapidity of currents	2.	11.	6
367.	— do. Baumgarten's with wings similar to water-screws	2.	17.	6
368.	— Hydrometric Pendulum	1.	1.	—

£ Sh. d.

C. Aërostatics and Aërodynamics.

369. **Apparatus for illustrating Mariotte's Principle** — Frick, Fig. 202 — consisting of a two-sides-glass-tube upon a graduated board . . . . . —. 10. 3
370. — do. with a steel-stop-cock . . . . . —. 17. 6
371. — do. with two steel-stop-cocks 1. 8. 6
372. — Weinhold's, Fig. 123 . . . . . 2. 15. 3
373. — for proving Mariotte's Principle, when the atmospheric pressure is less than one atmosphere — Müller-Pouillet I., Fig. 258. . . . . 1. 1. —
374. — do. with graduated glass-tube and stop-cock 1. 8. 6
375. — do. Pouillet's for different gases. — Müller-Pouillet I., Fig. 266 . . 5. 3. 6
376. **Schulze-Straussberg's Apparatus for illustrating the Barometer** 2. 11. 3
Serves also for explaining Mariotte's Principle; 5 feet long.
377. — do. same as 576, long only 4 feet . . . . . 2. —. 6
378. — Schulze-Straussberg's Apparatus for illustrating the Barometer, cannot be used for explaining Mariotte's Principle, long only 3 feet 1. 8. 6
379. — do. same as 376, may also be used for explaining the siphon . . . 3. —. 3
380. — do. same as 377, serves also for explaining the siphon . . . . . 2. 6. —
381. — do. same as 378, serves also for explaining the siphon. 1. 14. 6
The apparatus 378 and 381 may also serve for showing, how the tension of gases diminishe, when their volume grows larger. — The construction of the apparatus 379 and 380 may be perceived from figure 379, in which the length of the apparatus and the place of the stop-cock is not shown correct.
382. **Mercury-Barometer**, simple pattern of a siphon-barometer . . . . . 1. —. 6
383. — do. with index 1. 14. 6
384. — simple vessel-barometer . . . . . —. 11. 6
385. — do. Bertram's, iron-made . . . . . 1. —. —
More particulars about Mercury-Barometers are found at Chapter "Meterology".
386. **Aneroïd-Barometer**, Bourdon's system, with open work 1. 14. 6
387. — do. Vidi's with open work . . . . . —. 11. 6
388. **August's Nivelling-Barometer** . . . . . 2. 6. —
A full description of this instrument will be sent on demand.
389. **Huyghen's Variating-Barometer.** — Müller-Pouillet I. Fig. 250 . . . . . 1. 1. —
390. **Say's Stereometer.** — Müller-Pouillet I. Fig. 259 . . . . . —. 5. 6
391. **Kopp's Volumenometer.** — Müller-Pouillet I. Fig. 160 . . . . . 2. 11. 9
392. — do. Regnault's. — Müller Pouillet I. Fig. 261 . . . . . 2. 15. 3
393. **Siphon-Barometer** upon varnished board-not filled . . . . . —. 2. 9
394. — do. filled . . . . . —. 3. 6
395. — do. with silvered metal-scale, not filled. . . . . —. 3. 6
396. — do. filled . . . . . —. 4. —
397. **Closed Mercury-Manometer** — Frick, Fig. 265. . . . . —. 17. 6
398. **Apparatus bor showing, that pressure is uniformly transmitted in gases,** glass-made, with 5 small manometers . . . . . —. 5. 9
399. — do. brass-made. 1. 14. 6

	£	Sh.	d.
400. **Glass-Siphon**	—.	1.	3
401. — with handle	—.	1.	6
402. — with handle and ground glass-stopper	—.	2.	9



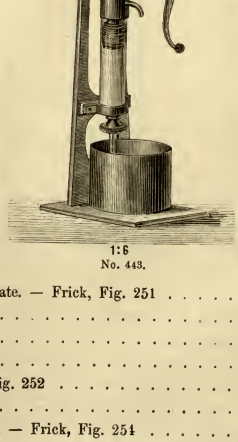
403. **Suction-pipe,** glass-made	—.	—.	9
404. — do. larger	—.	1.	6
405. — do. with lateral sucking tube	—.	2.	9
406. — do. with lateral sucking tube and stop-cock	—.	4.	—
407. — Equicrural Siphon with sucking tube — Weinhold, Fig. 134	—.	4.	—
408. — Turning Siphon of glass with glass-cylinder	—.	3.	6
409. — Three-sides-Siphon	—.	2.	3

	£	Sh.	d.
Suction-pipe			
410. — do. with sucking-tube and stop-cock	—.	4.	—
411. — do. with sucking-tube and valve	—.	3.	6
412. **Tantalus-Cup**, glass-made	—.	3.	6
413. — do. of varnished plate — Frick, Fig. 241.	—.	3.	6
414. — do. brass-made	—.	6.	9

1:4
No. 430.

415. **Magic Funnel** glass-made	—.	3.	6
416. — do. of varnished plate. — Frick, Fig. 250	—.	3.	6
417. — do. brass-made	—.	6.	9

1:6
No. 442.



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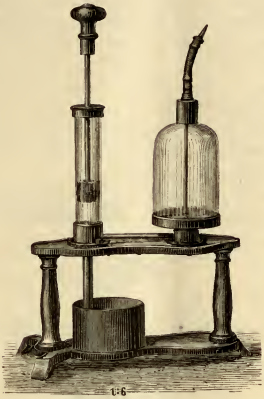
No. 443.

418. **The Widow's Oil-Cruet**, of varnished plate. — Frick, Fig. 251	—.	5.	3
419. — do. brass-made	—.	9.	3
420. **Magic Can**, glass-made	—.	3.	6
421. — do. with handle	—.	5.	3
422. — do. of varnished plate. — Frick, Fig. 252	—.	5.	3
423. — do. brass-made	—.	9.	3
424. **Sieve of the Vestal**, of varnished plate. — Frick, Fig. 254	—.	3.	6
425. — do. brass-made	—.	6.	9

	£	Sh.	d.
426. **Magic Barrel**, glass-made, for explaining the principle	—.	3.	6
427. — do. of varnished plate. — Frick, Fig. 257	—.	5.	3



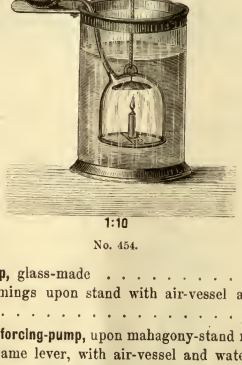
No. 446.

428. — do. brass-made	—.	9.	3
429. **Heron's ball**, simple, glass-made	—.	1.	6

No. 447.

430. — do. with brass-stop-cock	—.	3.	6
431. — do. larger	—.	5.	9
432. — do. with valve and stop-cock. — Frick, Fig. 260	—.	12.	—

	£ Sh. d.
433. **Heron s Fountain,** glass-made	—. 3. 6
434. — do. upon wood-stand	—. 5. 9
435. — do. larger, of varnished plate with brass-stop-cock — Frick, Fig. 256	1. 3. —
436. — both vessels glass-made with brass-fittings upon tripod-stand	2. 11. 9
437. **Intermittent Fountain** — glass-made — Weinhold, Fig. 138.	—. 5. 9
438. — do. upon stand	—. 10. 6
438a. **Interrupted Fountain**, of glass and brass, with receiver and dish of varnished zinc. On metal-stand . . . . . 1. 8. 9. or.	2. 1. 6
439. **Interrupted Siphon,** glass-made — Weinhold, Fig. 138	—. 1. 6
440. — do. with brass-trimmings	—. 5. 3
441. **Model of a Sucking-Pump,** entirely of glass	—. 2. 6
442. — do. with brass-trimmings, upon stand and with water-tank	—. 13. 9
443. — do. with brass-trimmings upon high stand and with water-tank	1. 8. 9



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No. 454.

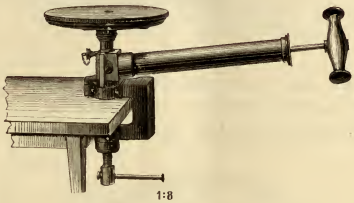
444. **Model of a forcing-pump,** glass-made	—. 3. 6
445. — do. with brass-trimmings upon stand with air-vessel and water-tank	1. 3. —
446. — do. larger	1. 14. 6
447. **Model of a sucking- and forcing-pump,** upon mahagony-stand may be brought in activity by the same lever, with air-vessel and water-tank	2. 6. —
448. **Model of a fire-engine,** entirely of glass	—. 4. 9
449. — do. with brass-trimmings upon stand with water tank	1. 5. 9
450. — do. larger	2. 1. 3
451. — do. made exactly as a large fire-engine, with wheels and with water-tank	4. 6. 3
452. **Model of a deep-measurer** — Weinhold, Fig. 140	—. 5. 3
453. **Model of a diving-bell**	—. 17. 3
454. — do. with light-holder and India-Rubber-blower	1. 14. 6
455 **Doebereiner's Blower.** — Frick, Fig. 266	—. 10. 6
456. **Water-Jet-Blower** — Weinhold, Fig. 23	1. 10. —
457. **Bunsen's Water-air-pump**	1. —. —
458. — do. with barometer and regulating stop-cock	1. 5. 9
459. — do. Arzberger & Zulkowski's — Weinhold, Fig. 163	2. 6. —
460. — do. entirely of glass — Weinhold, Fig. 164	—. 11. 6

		£	Sh.	d.
461.	**Geissler's Mercury-Air-Pump.** — Müller-Pouillet I. Fig. 291.	11.	10.	—
462.	— do. modified construction — Weinhold. Fig. 157 — for 2 pints mercury	10.	1.	3
463.	— do. for 1 pint mercury	8.	12.	6
464.	— do. Sprengel's — Weinbold, Fig. 156.	3.	9.	—
465.	— do. Töpler's, modified by Bessel-Hagen — Annalen der Physik und Chemie XII 3	11.	10.	—

Piston-Air-Pumps.

1. Stop-Cock-Air-Pumps with one chamber.

466.	— Liebig's Hand-Air-Pump with two locking-stop-cocks and one changing-cock, with tree-screw	1.	14.	6



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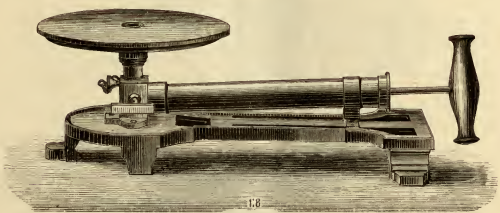
No. 468.

467.	— do. with vertical chamber and changing cock fixed on a wood-board. Length of the chamber 9 Inch, diameter $1^1/_5$ Inch, diameter of the plate 5 Inch	2.	1.	3



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No. 470.

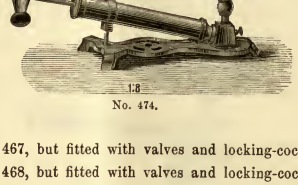
468.	— do. with slope chamber changing cock and cramp for screwing at a table. Length of the chamber 10 Inch, diameter $1^1/_5$ Inch, diameter of the glass-plate $7^1/_2$ Inch. The changing-cock is fitted with a hermetic brass-cone by which the air enters	2.	17.	6
469.	do. with slope chamber and changing-cock, fixed on a polished wood-board with cramp for screwing. Length of the chamber 10 Inches, diameter $1^1/_5$ Inch, diameter of the plate $8^1/_2$ Inches, also fitted with a hermetically ground brass-cone by which the air enters	2.	17.	6
470.	— do. same as 469, but with Iron-Support	3.	6.	6
471.	— do. same as 470, with a manometer placed on the side	4.	7.	3
472.	— do. with a horizontal chamber, with rack and pinion — Weinhold Fig. 148	7.	3.	9

£ Sh. d.

2 Valve-Air-Pump with one chamber.

473. — Mitscherlich's Hand-Air-Pump with two locking-cocks and valves . . 1. 3. —

474. — Small Valve-Air-Pump with slope champer, without locking-cock upon iron-stand. Length of the chamber 7 Inch, diameter 1 Inch, diameter of the plate 6 Inch . . . . . 1. 3. —



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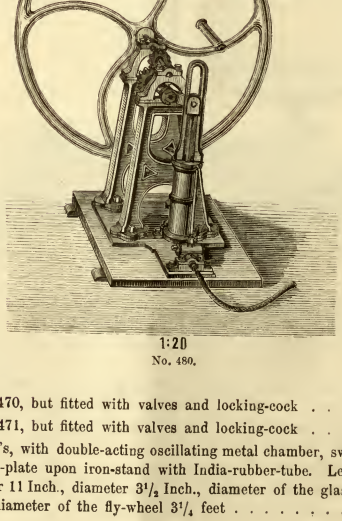
No. 474.

475. — do. exactly as 467, but fitted with valves and locking-cock . . . . 1. 11. —

476. — do. exactly as 468, but fitted with valves and locking-cock 2. 17. 6

477. — do. exactly as 469, but fitted with valves and locking-cock 2. 17. 6



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No. 480.

478. — exactly as 470, but fitted with valves and locking-cock 3. 6. 6

479. — exactly as 471, but fitted with valves and locking-cock 4. 7. 3

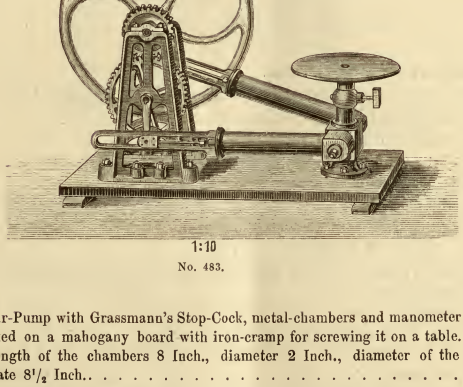
480. — do. Bianchi's, with double-acting oscillating metal chamber, swinging-wheel, glass-plate upon iron-stand with India-rubber-tube. Length of the chamber 11 Inch., diameter $3^1/_2$ Inch., diameter of the glass plate $9^1/_2$ Inch., diameter of the fly-wheel $3^1/_4$ feet . . . . . 29. 18. —

		£	Sh.	d.
	Piston-Air-Pump.			
481.	— do. same as 480, but smaller. Length of the chamber $8^1/_2$ Inch., diameter $2^1/_2$ Inch.	21.	17.	—
482.	— do. Deleuil's, with free piston and Babinet's cock, with automatical regulator and large fly-wheel	37.	7.	6

3. Cock-Air-Pumps with two chambers.

483.	— new construction, with oscillating metal-chambers, automatical regulator and fly wheel	17.	5.	—

This pump is evacuated by turning the fly-wheel continually in one and the same direction. The cocks are bored in a peculiar manner. Steering is done by the oscillating suckers.



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No. 483.

484.	— Air-Pump with Grassmann's Stop-Cock, metal-chambers and manometer fixed on a mahogany board with iron-cramp for screwing it on a table. Length of the chambers 8 Inch., diameter 2 Inch., diameter of the plate $8^1/_2$ Inch.	13.	4.	6
485.	— do. same, but with glass-suckers and larger. Length of the chambers $8^1/_2$ Inch., diameter 2 Inches	15.	16.	3

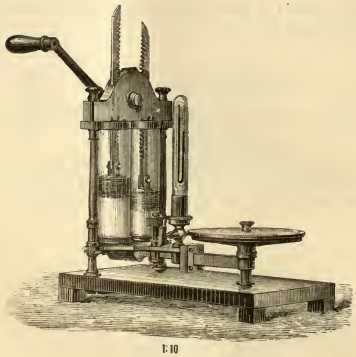
4. Valve-Air-Pumps with two Chambers.

486.	— Air-Pump with Babinet's Stop-cock and glass-chambers, manometer fixed on a mahogany board, with iron cramp to screw it on a table. Length of the chambers 8 Inch., diameter 2 Inch., diameter of the plate $8^1/_2$ Inch.	12.	18.	9
487.	— do. same as 486, but larger. Length of the chambers $8^1/_2$ Inch., diameter 2 Inches	15.	16.	3

£ Sh. d.

Valve-Air-Pump with two Chambers.

488. — do. extra large and screwed on a peculiar table. Length of the chambers 10 Inch., diameter $2^1/_2$ Inch., diameter of the plate 10 Inch. 21. 11. 3



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No 486.

Supplementary Parts for Air-Pumps.

489. — Plate fixed on a iron tripod-stand with locking-cock, diameter 6 Inch. 1. 3. —

490. — do. diameter 8 Inch. . . . . 1. 11. —

491. — do. diameter 10 Inch.. . . . . 2. 1. 3

492. — Tube with screw for connecting the plates of the air-pumps with pespecial plates or other apparatus . . . . . —. 6. 9

493. — do. with stop-cock . . . . . —. 10. 6

494. — Connecting Tube with wire-spiral, one yard . . . . . —. 5. —
(N. B. 90 Centimeter = 1 yard.)

495. — Receiving Vessels of strong, white glass with button and large plain-ground border.

Approximative Height	3	4	6	4	6	8	Inches
„ Diameter	$2^1/_2$	$2^1/_2$	$2^1/_2$	4	4	4	„
Price	—. 1. 3	—. 1. 6	—. 2. —	—. 2. 6	—. 2 3	—. 2. 9	
Approximative Height	4	6	8	10	$11^1/_2$	6	Inches
„ Diameter	6	6	6	6	6	8	„
Price	—. 2. 3	—. 2. 9	—. 3. 6	—. 4. —	—. 4. 6	—. 4. —	
Approximative Height	8	10	12	$13^1/_2$	16	Inches	
„ Diameter	8	8	8	8	8	„	
Price	—. 5. 3	—. 5. 9	—. 6. 9	—. 8. 6	—. 11. 6		

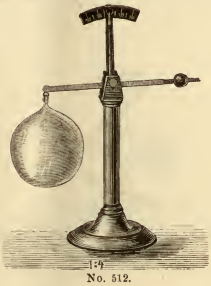
Receiving Vessels can be supplied also in any other sizes and will be charged moderately.

496. — Receiving Vessels with stuffing-box:

Approximative Height	6	9	$11^1/_2$	Inches
„ Diameter	6	7	8	„
Price	—. 11. 6	—. 17. 6	1. 5. 9	

		£	Sh.	d.
	Supplementary Parts for Air-Pumps.			
497.	— Barometer with high Receiving Vessel. Müller-Pouillet I. Fig. 286 .	1.	8.	9
498.	— do. with scale	1.	14.	6
499.	— do. Frick, Fig. 216	1.	11.	—
500.	— do. with scale	2.	1.	3
501.	— shortened Barometer, testing barometer with scale.	—.	3.	6
502.	— do. larger	—.	5.	3
503.	— do. larger still and with receiving vessel to screw on	—.	12.	—
504.	— Bourdon's Ring for screwing on the air-pump-plate, serves for explaining the metal-barometer and the metal-manometer	1.	—.	6
505.	— do. with plain ground stand for placing on the air-pump-plate	1.	5.	9


No. 503.


No. 512.

506.	— Apparatus for determining the gravity of the air, consisting of a glass-ball with stop-cock, fitted to be screwed on the plate	—.	8.	6
507.	— do. larger	—.	13.	9
508.	— do. same as 506, with hermetically closing stand for placing on the plate	—.	11.	6
509.	— do. same as 507, with hermetically closing stand for placing on the plate	—.	17.	3
510.	— do. — Weinhold, Fig. 150, entirely of glass with two locking stop-cocks	—.	14.	3
511.	— Dasymeter	—.	10.	3
512.	— do. larger	1.	5.	9
513.	— Ring for causing bladders to burst, glass-made	—.	1.	9
514.	— do. made of metal	—.	6.	9
515.	— Apparatus for showing that air presses equally to all directions, with hermetically closing standmade of iron	—.	17.	3
516.	— do. made of brass	1.	11.	—

517. — Magdeburg brass-hemispheres with strong and easy handles

Diameter	3	$3^1/_2$	4	5 Inches
for screwing	—. 13. 3	1. —. 6	1. 5. 9	1. 11. —
with hermetical stand	—. 16. —	1. 4. 6	1. 8. 9	1. 14. 6

		£	Sh.	d.
	Supplementary Parts for Air-Pumps.			
518.	— Mercury Rain, simple	—.	2.	9
519.	— do. larger	—.	6.	9
520.	— do. double. The vessels are fitted in such manner, that mercury must remain therein, and can never be poured out	—.	13.	9
521.	— do. same as 520, but larger	—.	17.	3
522.	— Mechanism, for showing that air extends, when pressure is lessened, consisting of an animals bladder, weights and ball	—.	9.	6
523.	— do. for same essay, consisting of an India-Rubber-ball with cock	—.	3.	—
524.	— Mechanism for causing, that a hen's egg perforated at the pointed edge empties into the receiving vessel	—.	5.	9
525.	— Mechanism for showing, that a siphon ceases to flow as soon as the ordinairy pressure of the air in lessened — Frick, Fig. 221	—.	2.	9

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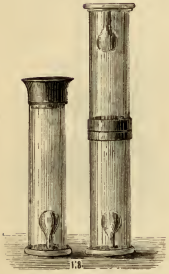
No. 516

1:6
No. 517.

526.	— Mechanism for showing, that the Heron's Ball begins to flow as soon as the pressure of the air in lessened — Frick, Fig. 221	—.	1.	6
527.	— Lever-Fountain, for screwing on the air-pump-plate	—.	8.	6
528.	— do. with a hermetically closing brass-stand	—.	12.	—
529.	— do. same, larger, with convex glass-tube and hermetically ground brass-stand	—.	17.	3
530.	— Wheel reacting against air, made entirely of glass, — this wheel turns under the receiving vessel when air is being evacuated	—.	6.	3
531.	— Gun-Lock, to be loosened by the stuffing-box — Frick, Fig. 219	1.	8.	9
532.	— Freezing-Apparatus, consisting of glass-cup, clock-glass, tripod-stand and small receiving-vessel	—.	2.	9
533.	— do. larger	—.	4.	6
534.	— Falling-Tube, long $1^1/_9$ yard, for screwing on to the air-pump-plate	—.	13.	9
535.	— do. with hermetically ground brass-stand	—.	18.	9
536.	— do., 4 Inches long, with stuffing-box and 4 clack-valves	2.	15.	3
537.	— Winged Wheel, to show the resistance of air — Weinhold, Fig. 155	—.	17.	3
538.	— Double mill for same essay, consisting of two little wind-wheels with horizontal or vertical wings with rack and weight	1.	8.	9
539.	— do. with spring	1.	3.	—

		£	Sh.	d.
	Supplementary Parts for Air-Pumps.			
540.	— Sound-Apparatus with clock-work	1.	1.	—
541.	— do. with electro-magnetic bell, the receiving vessel fitted with pole-screws	1.	10.	—
542.	— do. simple, consisting of a glass-ball with metall-clock therein which may be screwed to the plate	—.	11.	6
543.	— do. same as **542**, with a hermetic brass-stand	—.	17.	3



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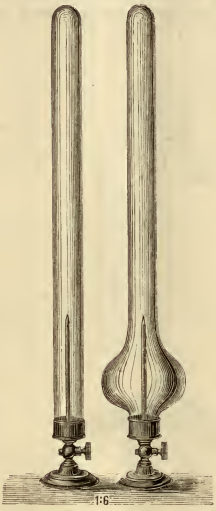

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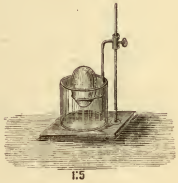

No. 524.

Wooden Models of Air-Pump — Stop-Cocks, made in profile for showing the inner arrangement:

544.	— Three-Way-Stop-Cock	—.	13.	9
545.	— Grassmann's Stop-Cock	1.	—.	6
546.	— Babinet's Stop-Cock	1.	3.	—
547.	— Stop-Cock for a two-chamber-air pump — new construction	1.	3.	—
548.	**Gay-Lussac's Force-Pump** with two lateral stop-cocks	2.	17.	6
549.	— do. with receiving vessel	5.	3.	6
550.	— do. Silbermann's with two foot-valves and two locking stop-cocks mounted on iron-stand — Müller-Pouillet I., Fig. 299	3.	9.	—
551.	— do. with receiving vessel	5.	15.	—
552.	— Hand-Force-Pump with simple foot-valve	1.	14.	6
553.	**Heron's Ball**, copper-made, for screwing on to 552	1.	3.	—

		£	Sh.	d.
554.	**Mechanism for cracking bladders,** to be screwed on to 552.	—.	11.	3
555.	**Compression-Fountain,** made of glass and metal, for screwing on to 552.	—.	17.	3
556.	**Heron's Ball with Force-Pump,** upon stand	2.	1.	3
557.	**Air-Gun with Force-Pump**	5.	3.	6
558.	**India-Rubber-Balloon,** to be filled with hydrogen or coal-gas	—.	2.	9
559.	— do. made of collodion.	—.	1.	9
560.	**Silver-plated copper-plate for producing Moser's breathed pictures.** . . .	—.	3.	3
561.	**Mechanism for proving, that heat is produced, when gases are absorbed** — with thermometer — Frick, Fig. 271	—.	5.	6

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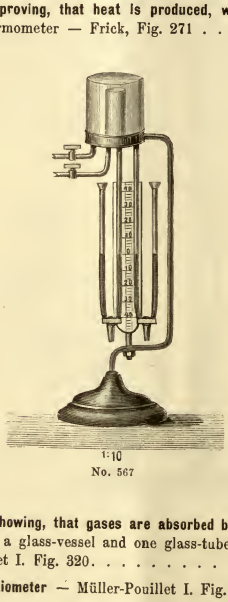
No. 556.



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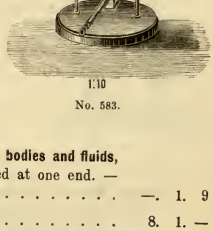
No. 567



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No. 583.

562.	**Mechanism for showing, that gases are absorbed by solid bodies and fluids,** consisting of a glass-vessel and one glass-tube closed at one end. — Müller-Pouillet I. Fig. 320.	—.	1.	9
563.	**Bunsen's Absorbtiometer** — Müller-Pouillet I. Fig. 324	8.	1.	—
564.	**Apparatus for Berthollet's Experiments for showing that gases are mixing in equal volumes** — Müller-Pouillet I. Fig. 326	1.	3.	—
565.	— do. simple, consisting of two glass-cylinders of equal size, one hermetically ground upon the other.	—.	4.	—
566.	**Apparatus for proving by experiment, the diffusion of gases when passing through porous partition-walls**	—.	3.	3
567.	— do., new construction with 2 manometers, upon a stand.	1.	14.	6
568.	— do. Ansell's system, so-called Gas-Indicator, with electrical contact .	—.	17.	3
569.	— do. Weinhold's. Fig. 170	—.	4.	6
570.	**Bellows** with glass-sides, for showing its principle	—.	13.	9
571.	**Model of a Cylindric Blower,** glass-made with brass-trimming. — Müller-Pouillet I. Fig. 440	2.	1.	3

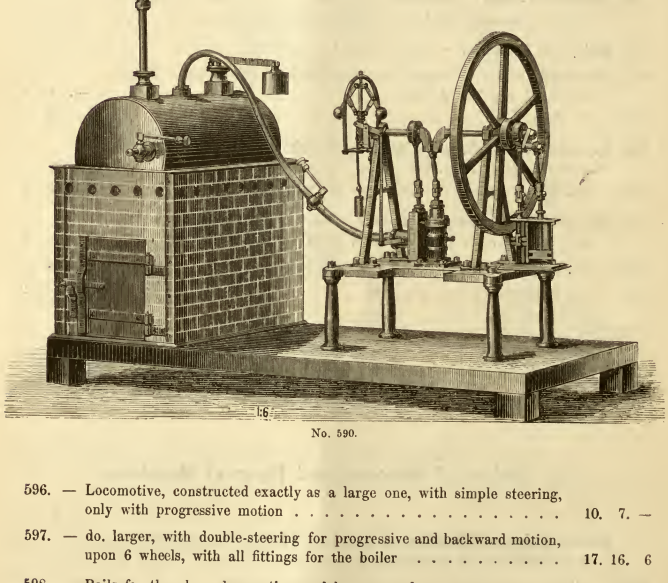
		£	Sh.	d.
572.	**Bunsen's Apparatus for determining the specific gravity of gases by means of their velocity of escaping.** — Müller-Pouillet I. Fig. 442	2.	15.	3
573.	**Hachet's Mechanism for making Clement's and Desormes's essay.** — Müller-Pouillet I. Fig. 455.	—.	8.	6
574.	— do. simpler	—.	2.	9
575.	**Mechanism for proving that air is evacuated in the essay of Clement and Desormes** — Müller-Pouillet I. Fig. 447	—.	10.	3
576.	**Model of Reichert's Injector.** — Müller-Pouillet I. Fig. 448.	—.	2.	9
577.	**Dispersing-Apparatus.** — Müller-Pouillet I. Fig. 449	—.	1.	9
578.	**Air-Reaction-Wheel** — Weinhold, Fig. 159. — It may also be connected with the gas-pipe and the gas lighted at the opening	—.	5.	6
579.	**Model of a Parachute.** — Müller-Pouillet I. Fig. 452	—.	5.	6
580.	**Screw-Flyer,** serves for explaining the action of the ship-screw. — Müller-Pouillet I. Fig. 455 & 556	—.	1.	6
581.	— do. larger	—.	3.	3
582.	**Apparatus for explaining the deviation of projectiles,** Pfaundler's system. Müller-Pouillet I. Fig. 644—646 a a	1.	14.	6
583.	— do. Beetz's System. — Carl's Rep. IV, pag. 183.	1.	5.	9
584.	**Apparatus for examining the motions which take place, when gases enter in a space already filled with other gases** — Reusch's system. . . .	—.	8.	6
585.	— do. simpler — Frick, Fig. 357 — with handle	—.	4.	6
586.	— do. Weinhold's system, Fig. 181	—.	13.	9

D. Models of Machines and Parts of Machines.

Working Models of Steam-Engines, may be put into action by alcohol- or gas-heating and by compressed air.

587.	— High-Pressure-Steam-Engine with oscillating cylinder	1.	—.	6
588.	— High-Pressure-Steam-Engine with upright cylinder and slide-steering	6.	18.	—
589.	— do. same as precedent, but larger, with gauge-cock, regulator, spring-manometer and copper-boiler	14.	7.	6
590.	— do. same as 589, with a profile-model moved from the fly-wheel-journal	16.	17.	9
591.	— do. same as 589, with sucking- and force-pump and with spring-fountain	18.	8.	—
592.	— Lying High-Pressure-Steam-Engine with expansion-steering, copper-boiler with all fittings	20.	2.	6
593.	— do. same as precedent, but larger	28.	15.	—

		£	Sh.	d.
	Working Models of Steam-Engines, may be put into action by alcohol-or gas-heating and by compressed air.			
594.	— Watt's Atmospheric Steam-Engine	8.	12.	6
595.	— Watt's Double-Acting Steam-Engine with condensator, double parallelogram, air- and feed-pump, spring-manometer, regulator, copper-boiler and complete fittings	27.	12.	—



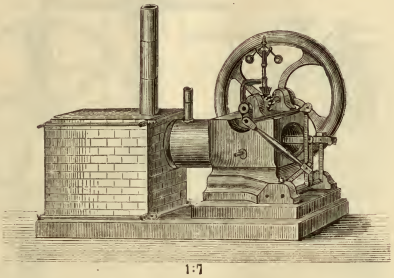
No. 590.

596.	— Locomotive, constructed exactly as a large one, with simple steering, only with progressive motion	10.	7.	—
597.	— do. larger, with double-steering for progressive and backward motion, upon 6 wheels, with all fittings for the boiler	17.	16.	6
598.	— Rails for the above locomotive-models, one yard.	—.	10.	3
599.	— Model of a Wheel-or Screw-Steamer with 2 steam-cylinders	8.	12.	6
600.	— do. larger with all fittings for the boiler	28.	15.	—
601.	**Model of Lehmann's Hot-Air Machine**	4.	6.	3
602.	— do. with regulator and water-cooling-pump	6.	18.	—
603.	**Model of a Gas-Motor**	4.	6.	3
604.	— do. larger	6.	18.	—
605.	— do. System Otto Langen	17.	5.	—

		£	Sh.	d.
606.	**Model of Schmidt's Water-Motor**	4.	6.	3

Vertical Water-Wheels and Turbines

607.	— Overshot-Water-Wheel with sluice and Water-course	1.	8.	9
608.	— do. quite simple	—.	10.	3



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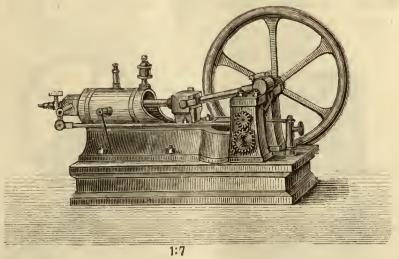
No. 602.

609.	— breast-wheel with sluice and water-course	1.	8.	9
610.	— do. quite simple	—.	10.	3
611.	— Poncelet's Water-Wheel, with water-course	2.	1.	3



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No. 605.

612.	— Model of a Turbine, brass-made with glass-wall	6.	18.	—
613.	— Model of a Screw-Turbine	—.	17.	3

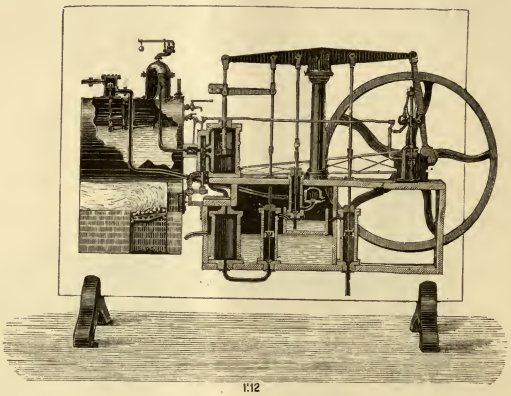
Profile Models of Steam-Engines.

614.	— Profile Model of a High-Pressure-Engine with oscillating cylinder, of metal and wood, with turning-crank	2.	17.	6
615.	— Profile Model of a High-Pressure-Engine with upright cylinder, of metal and wood, with turning-crank	4.	12.	—

£ Sh. d.

Profile Models of Steam-Engines.

616. — Profile Model of Watts Low-Pressure-Engine, of metal and wood, with turning-crank 16. 19. 3



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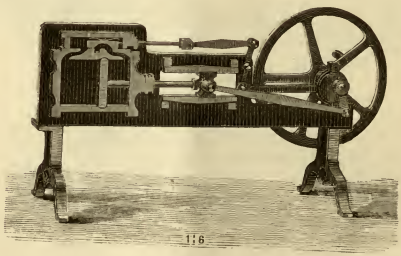
No. 616.

617. — Profile Model of a Locomotive for progressive and backward motion, of metal and of wood, with turning-crank 16. 19. 3

618. — Profile Model of a Steam-Cylinder with slide-steering of metal, with turning crank . . . . . 1. 11. —



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No. 618.

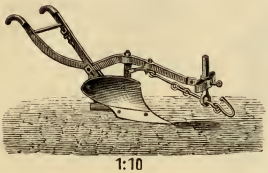
619. — do. of wood . . . . . 1. —. 6

620. — do. of metal with regulator and throttle-valve 2. 11. 9

621. — Profile Model of a Screw-Steamer, made of metal and wood, with turning-crank 20. 2. 6

622. — Profile Model of Watt's Low-Pressure-Engine, made of wood, may be moved by a crank 1. 14. 6

	£	Sh.	d.
Profile Models of Steam-Engines			
623. — Profile Model of a Locomotive, of wood, with turning-crank	1.	14.	6
624. — Profile Model of the Machine of a Wheel-Steamer, of wood, with turning-crank	2.	11.	9
625. — Profile Model of the Machine of a Screw-Steamer, made of board, with turning-crank	3.	14.	9
626. — do. with 4 coupled cylinders	6.	18.	—
627. — Glass-Frame for the models 622–626, each	—.	13.	9



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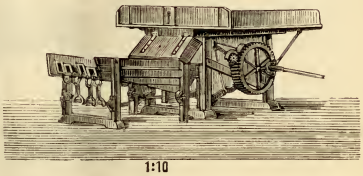
No. 628.



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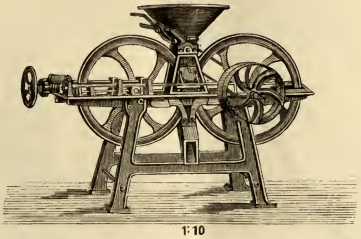
No. 640

Agricultural Machines

628. — single-share-swinging-plough	2.	17.	6
629. — single-share-plough with cart	5.	15.	—
630. — single-share-earing-plough with cart	5.	15.	—



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No. 641.

631. — deep-earing-plough with cart	6.	18.	—
632. — Miner or subsoil-plough	2.	17.	6
633. — Heaping plough	2.	17.	6
634. — Two-Shares-plough	4.	17.	9
635. — Three-Shares-plough	5.	15.	—
636. — Paring and drill-plough	5.	15.	—
637. — Two-fields-harrow	2.	11.	9
638. — Universal-Sowing-Machine	8.	12.	6
639. — Horse-Rake	5.	15.	—
640. — Threshing-Machine with straw-yielder and horse-work	34.	10.	—
641. — Corn-Squashing-Machine	6.	18.	—

£ Sh. d.

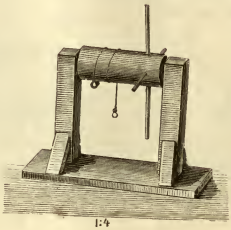
Agricultural-Machines

642. — Kibbling-Mill 8. 12. 6

All these Models of Agricultural-Machiness are made exactly as the original Machines and of the same material.

Simple Machines

643. — Model of a Reel, of wood . . . . . —. 2. 9



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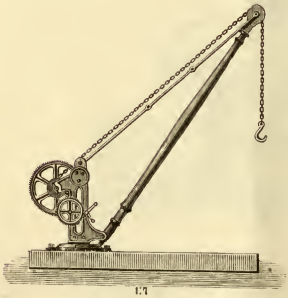
No. 643.

644. — do. of metal . . . . . —. 12. —
645. — Model of a Differential-Reel, of wood . . . . . —. 11. 6
646. — do. of metal . . . . . 1. 3. —
647. — Model of a Ship-Pulley, of wood . . . . . —. 2. 9



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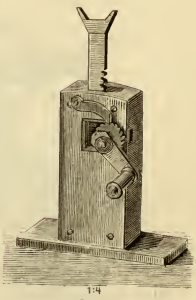
No. 650.



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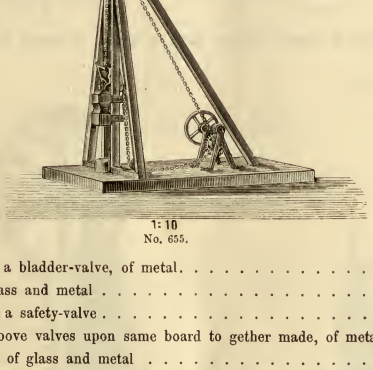
No. 652.

648. — do. of metal . . . . . —. 11. 6
649. — Model of a Pulley with dented wheel and mover — Müller-Pouillet I. Fig. 38 — of metal 1. 14. 6
650. — Model of a crane, of metal 4. 6. 3
651. — Model of a Screw-Jack. — Müller-Pouillet I. Fig. 44 — of metal . 1. 8. 9
652. — Model of a Draw-Beam, of wood . . . . . —. 11. 6
653. — do. of metal 1. 8. 9
654. — Model of a ram . . . . . —. 10. 3

	£	Sh.	d.
Simple Machines			
655. — Model of a steam-ram	3.	9.	—
656. — Model of a chain-pump	4.	6.	3
Models of Valves.			
657. — Model of a clack-valve, of metal	—.	5.	9
658. — do. same of glass and metal	—.	9.	3
659. — Model of a ball-valve, of metal	—.	5.	9
660. — do. of glass and metal	—.	9.	3
661. — Model of a conic-valve, of metal	—.	5.	9
662. — do. of glass and metal	—.	9.	3
663. — Model of a plate-valve, of metal	—.	5.	9
664. — do. of glass and metal	—.	9.	3



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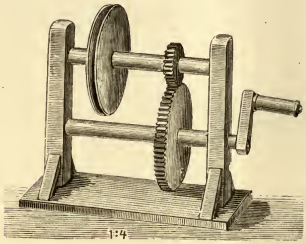
No. 655.

665. — Model of a bladder-valve, of metal	—.	5.	9
666. — do. of glass and metal	—.	9.	3
667. — Model of a safety-valve	—.	5.	9
668. — all the above valves upon same board to gether made, of metal	1.	7.	6
669. — do. same of glass and metal	2.	6.	—
Transmission of a rotatary motion from one axis of rotation to another.			
670. — Running Strap, with wooden-pulleys	—.	10.	3
671. — do. same, entirely of metal	—.	17.	3
672. — do. for crossed straps, with wooden-pulleys	—.	10.	3
673. — do. as 672, but entirely of metal	—.	17.	3
674. — do. with right-angle-axles, the pulleys of wood	—.	10.	3
675. — do. same as 674, but entirely of metal	—.	17.	3
676. — Wheel and Pinion, of wood	—.	6.	3
677. — do. of metal	—.	17.	3
678. — Endless Screw with usual dented wheel	—.	8.	6
679. — do. same of metal	1.	—.	6
680. — do. with wheel dented in shape of screws, of metal	1.	3.	—
681. — Two Angle-Wheels, of metal	1.	—.	6
682. — Cog-Wheel with lantern, of metal	1.	3.	—

£ Sh. d.

Transmissions of a rotatory motion from one axis of rotation to another.

683. — Hooks Key, of wood 1. 5. 9
684. — do. same of metal 2. 1. 3



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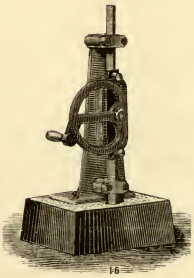
No. 676.

1:4

No. 686.

A rotary motion is changed into one going to and fro in upright direction.

685. — Crank 2. 1. 3
686. — Bow-Triangle . . . . . 2. 6. —



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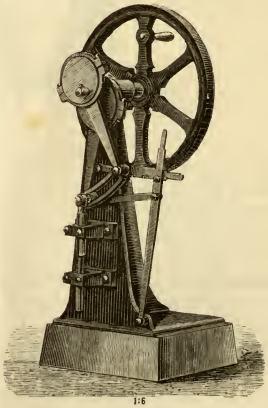
No. 687.



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No. 690.

687. — Heart Motion . . . . . 2. 6. —
688. — Watt's Parallelogram 1. 8. 9
689. — Simple Eccentric Catch, variable. 2. 1. 3
690. — Double Eccentric Catch with twofold steering for moving locomotives forward and backward 4. 6. 3
691. — To- and fro-Motion by means of 3 half-dented wheels . . . . . 2. 6. —
692. — Planetary Wheel for upright motion . . . . . 3. 9. —

£ Sh. d.

II. Theory of Undulation.

693. **Mechanism for producing transversal waves,** consisting of a brass-spiral, of 5½ yards length and fitted with rings on both sides . . . . . —. 17. 3

694. — do. consisting of cord with balls sliding on it . . . . . —. 8. 6

695. — do. consisting of an India-rubber-strap with sliding balls, Weinhold's system . . . . . —. 17. 3

1·15
No. 697

696. **Apparatus for explaining the undulation of liquids** — Eisenlohr, Fig. 214—216 2. 6. —

697. **Wiedemann's Apparatus for representing the progression and repulsion of waves produced by liquids.** — Frick, Fig. 362 . . . . . 2. 1. 3

698 **Apparatus for explaining the repulsion and interference of waves,** consisting of 3 different mercury-vessels and 2 pipettes 1. 7. 6

699. **Müller's Stroboscopic wave-disks,** for explaining the undulations of cords, of water and sound . . . . . —. 16. —

700. — do. with stroboscope 1. 5. 6

701. — do same with stroboscope, more elegant 1. 14. 6

702. **Quinke's Wave-pictures for the stroboscopic cylinder** . . . . . —. 6. 9

703. — do. with a stroboscopic cylinder . . . . . —. 13. 9

704. **Projecting-Wave-Machine fitted for the Sciopticon** with 5 photographs of disks Weinhold's system, Fig. 172–176 . . . . . 2. 17. 6

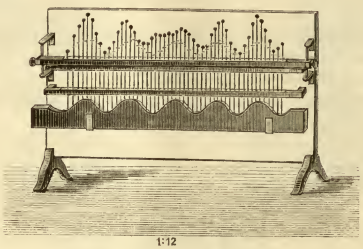
705. **Weber's Wave-Channel,** with glass-walls . . . . . 2. 6. —

706. **Wheatstone's Wave-Machine** for explaining the undulations of sound, with 3 different wave-systems. — Eisenlohr, Fig. 238 . . . . . 2. 1. 3

707. **Machine for showing the longitudinal waves,** Weinhold, Fig. 178 . . . . 4. 6 3

708. — do. Mach's System, with 2 series of cylinders of different weight. — Carl's Rep. III. pag. 384 . . . . . 1. 14. 6

		£	Sh.	d.
709.	**Eisenlohr's Apparatus for explaining the phenomena of interference,** with 3 different systems of waves. Weinhold, Fig. 231	2.	2.	—
710.	**Eisenlohr's Apparatus for explaining the propagation of light** — Eisenlohr, Fig. 284.	1.	7.	6
711.	**Apparatus for showing the vibrations of minimal parts of the Ether in polarized light** — Frick, Fig. 501	1.	12.	6



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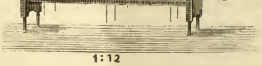
No 709.

712.	**Wheatstone's Apparatus for explaining the propagation of the light polarized in circular form**	—.	17.	6
713.	**Mach's Wave-Machine,** with wooden-support	2.	12.	6
714.	— do. with iron-frame. — Müller-Pouillet II. 1. Fig. 596	4.	6.	3



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No. 710.

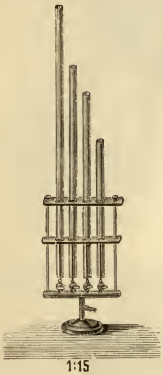
715.	**Plücker's and Fessel's Wave-Apparatus** for linear, circular and elliptic polarisation — Müller-Pouillet II. 1. Fig. 592	5.	3.	6
716.	— do. same, serves also for explaining the double refraction	14.	7.	6
717.	**Schulze's Wave Machine** with sliding clasps — Poggendorff's Annalen 1857. C. pag. 583	14.	7.	6
718.	— do. with screws, for turning.	17.	5.	—

£ Sh. d.

III. Acoustics.

A. Progressive and Stable Air-Waves.

719. **Thread-Telephones,** 2 pieces, Weinhold, Fig. 184 . . . . . —. 6. 9
720. **Speaking-Trumpet,** of brass . . . . . —. 5. 9
721. — do. japanned body . . . . . —. 3. 3



1:15
No. 728.

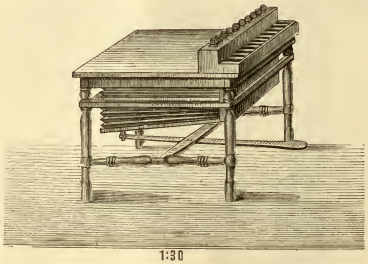
1:6
No. 749.

722. **India-Rubber hearing-trumpet** . . . . . —. 10. 3
723. — do. of varnished metal . . . . . —. 3. 3

724. **Savart's Apparatus for producing stable vibrations in closed tubes.** — Müller-Pouillet I. Fig. 475 . . . . . 1. 8. 9
725. — do. for closed and open tubes, consisting of si paste board-tubes and glass-globe. — Müller-Pouillet I. Fig. 474 & 482 . . . . . —. 12. —

726. **Chemical Harmonica,** consisting of a vessel for making hydrogen-gas and of 4 different glass-tubes. — Frick, Fig. 375 . . . . . —. 9. 3
727. — do. with stand for attaching the tubes . . . . . —. 14. 3
728. — do. for coal-gas with 4 burners and 4 tuned tube upon stand, each burner is fitted with a regulating cock 2. 1. 3
729. — do. same as ditto the burners fitted with platin-points 2. 8. 3

		£	Sh.	d.
	Chemical Harmonica.			
730.	— do. same as 728, but fitted with flapo by means of which tuning may be interrupted at any moment without extinguishing the flame. Weinhold, Fig. 191	2.	8.	3
731.	— do. as above the burners fitted with platine-points	2.	15.	3
732.	— large chemical Harmonica for coal-gas, with 7 resonators for the upper tunes — Weinhold, Fig. 193	3.	9.	—
733.	**Gas-Lamp for the Chemical Harmonica,** one jet with cock. — Müller-Pouillet I. Fig. 487.	—.	10.	3
734.	— do. with platina-point	—.	12.	—
735.	— do. with many small apertures. — Müller-Pouillet I. Fig. 489	—.	12.	—
736.	— do. Rausch's for large pipes. — Müller-Pouillet I. Fig. 490	—.	5.	9
737.	**Brass-Tubes of different width and length,** one pound	—.	4.	6



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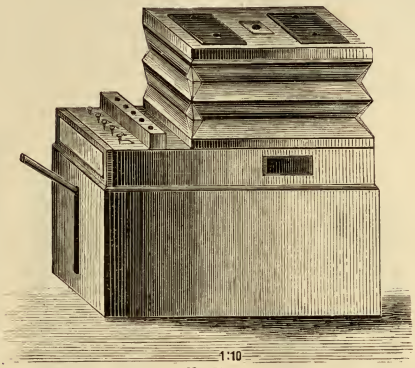
No. 747.

738.	**Apparatus for making Rijke's Essay,** consisting of a wide tube with net of wire and small burner. — The tubes resound when the wire-net is heated — Weinhold, page 217	—.	13.	9
739.	**Rotating Mirror,** may be placed upon any centrifugal machine	—.	11.	6
740.	— do. with clock-work	2.	11.	9
741.	— do. with electromagnetic motor	2.	1.	6
742.	— do. Reichert's, may be placed on centrifugal machines with horizontal axis of rotation. Müller-Pouillet I. Fig. 493	—.	11.	6
743.	— do. with clock-work	2.	11.	9
744.	— do. with electromagnetic motor	2.	1.	3
745.	**Töpler's Stroboscopic Apparatus for the analysis of oscillating flames,** consisting of one large disk with 20 openings and turning mechanism	2.	12.	—
746.	— do. with clock-work	4.	6.	3
747.	**Blowing Table** with wind-chest arranged for 10 pipes	6.	6.	6
748.	— do. for 8 pipes	5.	9.	3
749.	— do. for 5 pipes	4.	6.	3
750.	**Bellows with wind-chest for 5 pipes**	2.	15	3
751.	— do. with glass-walls, to make visible the inner arrangement	3.	2.	—
752.	— do. Bertram's with wind-chest for pipes	2.	8.	6

	£	Sh.	d.
Bellows with wind-chest for 5 pipes.			
753. — do. with wind-chest for 4 pipes	2.	3.	9
754. — do. without wind-chest, only with a India-Rubber-tube	1.	14.	6



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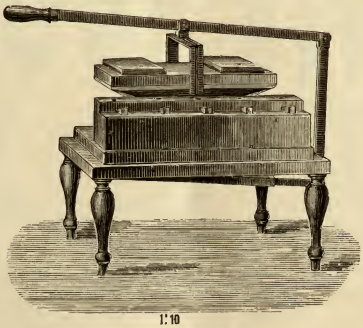
No. 751.

Labial Whistles.

755. — open labial whistle of wood	—.	5.	9
756. — do. of tin	—.	6.	9



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No. 752.

757. — covered labial whistle of wood	—.	7.	3
758. — do. of tin	—.	8.	6
759. — simple labium, may be put upon any vessel and sounds, when blown	—.	5.	3
760. — labial whistle, closed in the middle, giving open and covered the same tune	—.	17.	3

£ Sh. d.

Labial-Whistles.

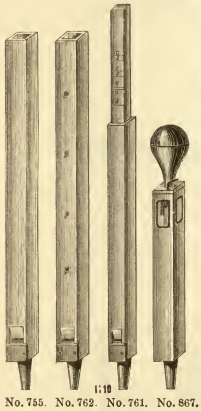
761. — covered labial whistle with sliding pusher which is graduated at the chromatic tune . . . . . —. 17. 3

762. — open labial whistle with lateral apertures to be closed . . . . . —. 13. 9

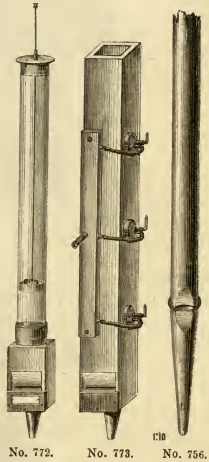
763. — labial whistle with adjusting stopple and labium . . . . . —. 12. —

764. — open labial whistle with a parchment wall . . . . . —. 17. 3

765. — Two open conical labial whistles, one of them has the opposite basis of the other . . . . . 1. 3. —



No. 755. No. 762. No. 761. No. 867.



No. 772. No. 773. No. 756.

766. — Two open labial whistles in shape op a trapezium, one of them has the opposite basis of the other 1. 14. 6

767. — open cubic whistle . . . . . —. 13. 9

768. — Covered cubic whistle . . . . . —. 19. —

769. — Four covered cubic whistles, giving the accord . . . . . 2. 6. —

770. — Two open whistles of same tune, one of them may be slightly untuned by means of a sliding tube . . . . . —. 17. 3

771. — Glass-Whistle with sliding membrane to make visible the knots of vibration . . . . . —. 13. 9

772. — do. larger . . . . . 1. 3. —

773. — Koenig's Whistle with 3 gas-flame-manometers 1. 7. 6

774. — do. with regulating stop-cocks for each flame 1. 14. 6

775. — do. Weinhold's, Fig. 189 . . . . . 1. 14. 6

776. — Kundt's whistles with three water-manometers and valves acting on one side only. — Poggendorff's Annalen CXXXIV. pag. 563 . . . . 2. 1. 3

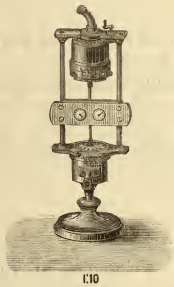
		£	Sh.	d.
777.	**Gas-Flame-Manometer** upon stand. — Weinhold, Fig. 222	—.	11.	6
778.	— do. with mirror-box and rotatory mechanism upon one same support	2.	6.	—
779.	— do. with rotating burner. — Weinhold, Fig. 223	2.	1.	3
780.	**Apparatus for comparing two tuning air-columns by the means of manometrical flames,** consisting of a wind-chest, a rotating mirror and 5 whistles, each of which is supplied with a manometrical box at the swinging knots of the key-note	8.	12.	6

1:8
No. 777.

781. — do. Bresina's System, consisting of a two-flame chemical Harmonica combined with sensitive flames and a rotating mirror. — Carl's Repertorium 1881, pag. 84. — The mirror is moved by an electromagnetical motor 4. 6. 3

1:6
No. 784.

1:5
No. 785.



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No. 789.

782.	**Kundt's Pipe for producing acoustic dust-figures.** — Müller-Pouillet I. Fig. 504	—.	8.	6
783.	— do. same with brass-fittings, may be filled with any gases	—.	17.	3
	Sirenes.			
784.	— Sirene, Cagniard de la Tour's	—.	13.	9
785.	— do. with counting work	3.	9.	—
786.	— Dove's Accord-Sirene	5.	9.	3
787.	— do. with counting work	6.	6.	6
788.	— Helmholtz's Double Sirene	11.	10.	—
789.	— do. with counting work	14.	7.	6

		£	Sh.	d.
	Sirenes.			
790.	— Seebeck's Disk Sirene with 8 series of holes, fitted to be placed upon the centrifugal-machine	1.	3.	—
791.	— do. with 4 series of holes	—.	6.	9
792.	— do. as 791, but smaller	—.	5.	3
793.	— large disk-Sirene with 22 series of holes, Oppelt's system, of metal, may be placed on a centrifugal machine	1.	11.	—
794.	— do. with fly-wheel and support	3.	2.	—
795.	— Savart's Wheel-Sirene with fly-wheel and support	2.	17.	6
796.	— do. same with count-work. — Müller-Pouillet I. Fig. 512	3.	9.	—
797.	— Savart's dented wheels, 4 pieces tuned to accord, may be placed upon the centrifugal-machine	—.	13.	9
798.	— do. smaller	—.	6.	9

1:4

No. 797.

799.	**Savart's Apparatus for determining the lowest limit of audibility.** — Müller-Pouillet I. Fig. 515	3.	9.	—
800.	**Koenig's Apparatus for determining the upper limit of audibility.** — Müller-Pouillet I. Fig. 516	—.	17.	3

B. Principles of Vibrations and Sounds of solid bodies.

801.	**Monochord** with 2 strings, both to be tuned by pegs, with gamut and tuning key	—.	10.	3
802.	— do. with 2 strings, one to be drawn by pegs, the other by weights, with gamut and tuning key	—.	11.	6
803.	— do. with 3 strings, two of which may be drawn by pegs, the third one by weights, with 4 different scales, tuning key, fiddle-stick, bridge and different strings	2.	15.	3
804.	— do. with 3 strings, two may be drawn by pegs, the third one by weights, with centimeter-scale, tuningkey, fiddle-stick, bridge and several strings. — Free length of strings $1^1/_2$ yard — Weinhold, Fig. 198	2.	1.	3

£ Sh. d.

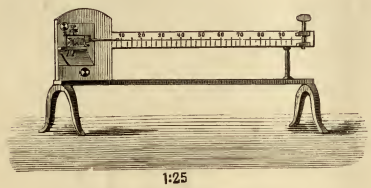
Monochord.

805. — with 4 strings, two of which may be drawn by pegs, the two other by weights, with 4 different scales, tuning key, fiddle-stick, bridge and several strings, the whole in a wooden box . . . . . 3. 2. —

806. **Aeolian harp** with 6 strings . . . . . 1. 1. —

807. **Apparatus for showing how standing undulations are produced by the interference of direct and reflected waves.** — Müller-Pouillet I. Fig. 523 1. 3. —

808. **Apparatus for showing standing undulations produced by bent strings,** Melde's system. — Müller-Pouillet I. Fig. 525. . . . . 2. 2. —



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No. 809.

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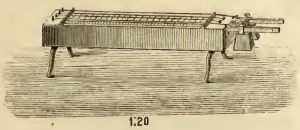
No. 810.

809. — do. with swinging spring and electro-magnet for producing permanent undulations 2. 17. 6

810. — do. only the electro-magnet with swinging spring 1. 8. 9



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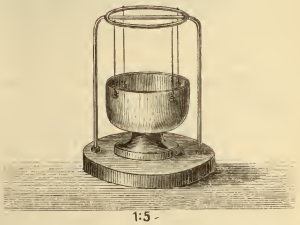

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No. 817.

811. **Apparatus for producing Chladni's sounding figures,** 6 different plates with holder and fiddle-stick . . . . . —. 13. 9

812. — 4 plates each made of glass, wood and brass of different shapes, with holder, fiddle-stick and dredger, in boxes 1. 7. 6

813. **Apparatus for producing knot-lines in shape** of rings, consisting of a metal-plate and a steel-stick. — Müller-Pouillet I. Fig. 542 . . . . . —. 11. 6

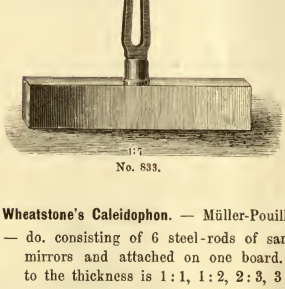
814. — do. consisting of a wood-stick with stand and a glass-plate with screw. — Müller-Pouillet I. Fig 544 . . . . . —. 6. 9

815. **Savart's Apparatus for showing how the knot-lines may be displaced,** consisting of a large brass-plate with stand. — Müller-Pouillet I. Fig. 546 1. 9. —

816. **Marx's Aeoline,** for producing sounding-figures upon a thin membrane . 1. 1. —

817. **Apparatus for showing the knot-lines** of a sounding bell, consisting of a glass-bell upon support with 4 pendulas. — Müller-Pouillet I. Fig. 547 1. 5. 9

		£	Sh.	d.
818.	**Four Steel-Rods upon one board** — two of them are equally long and thick, but unequally broad, the third one has the same length, but the twofold thickness, the fourth has the same thickness as the two first and a length equal to that of the others multiplied by $\sqrt{2}$. — Müller-Pouillet I. Fig. 549		—. 10.	6
819.	— Four brass-rods on one same board of same size as the foregoing steel-rods		—. 13.	6
820.	**Tack-Fiddle,** 8 steel-rods mounted on a resounding box, with fiddle-stick — producing the octave		1. 3.	—
821.	**Eight Wood-Rods,** which sound in accord, when cast to earth		—. 11.	6
822.	**Metal-Harmonica.** — Müller-Pouillet I. Fig. 553.		—. 13.	9
823.	**Glass-Harmonica** — Müller-Pouillet I. Fig. 554		—. 8.	6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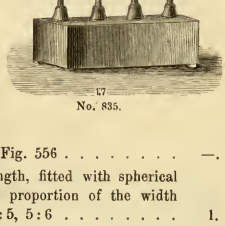
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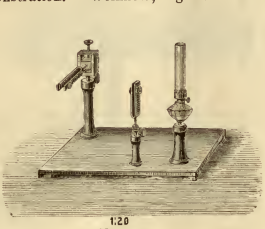
No. 835.

824.	**Wheatstone's Caleidophon.** — Müller-Pouillet I. Fig. 556		—. 5.	3
825.	— do. consisting of 6 steel-rods of same length, fitted with spherical mirrors and attached on one board. The proportion of the width to the thickness is 1:1, 1:2, 2:3, 3:4, 4:5, 5:6		1. 8.	9
826.	**Melde's Universal-Caleidophon.** — Müller-Pouillet I. Fig. 557		—. 13.	9
827.	— do. with hinge		—. 17.	3
828.	— do. same with a small plain mirror, the swinging curves may be projected at the ceiling		—. 17.	3
829.	— do. Tollinger's with holder for attaching glowing sprinkling-coals		—. 17.	3
	Tuning-Forks.			
830.	— Tuning-Forks a′ or c′ with handle.		—. 2.	3
831.	— Tuning-Fork with a cylindrical glass-bottle as resonator. — Weinhold, Fig. 157		—. 3.	3
832.	— Two tuning-forks a′ upon separate resounding boxes, one of which may be untuned by a sliding-weight (Diapason)		1. 8.	9
833.	— Two tuning-forks c′ upon separate resounding boxes, one of them may be untuned by a sliding-weight (Diapason)		1. 14.	6
834.	— Small pendulum upon stand to make the resonance visible.		—. 4.	—
835.	— Four small tuning-forks, producing the accord on resounding box		—. 13.	9
836.	— Four large tuning forks, producing the C dur accord, mounted upon resounding-box and fitted for being taken off		3. 9.	—

		£	Sh.	d.
	Tuning Forks.			
837.	— Eight large tuning-forks, producing the accord, on resounding box . .	2.	17.	6
838.	— Thirteen large tuning-forks, upon tuned resounding boxes, giving the pure diatonic gamut	6.	18.	—
839.	— Five tuning-forks upon tuned resounding boxes, which strongly resound, when the vowels a, e, i, o, u are pronounced	6.	6.	6
840.	— do. same with resonators	7.	9.	6
841.	— One tuning-fork c′ upon close resounding box with prolongating tube and India-Rubber-Tube	1.	—.	9
842.	— Strong tuning-fork of about 2000 vibrations for proving Doppler's law. — Weinhold, Fig. 234	2.	1.	3
843.	— Standard Tuning-Fork upon resounding box	—.	17.	3
844.	**Apparatus for examining Lissajou's Curves,** consisting of two tuning-forks with mirrors and lamp upon stand	4.	6.	3
845.	— do., simple, without lamp, fitted for being used with a heliostate for the objective demonstration. — Weinhold, Fig. 216 — without heliostate	2.	17.	6



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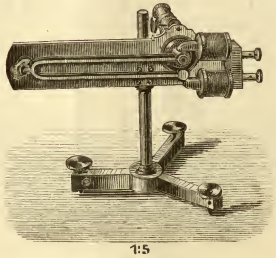
No. 844.

846.	— do. Pfaundler's, with swinging steel-springs of large width of vibration in place of the tuning-forks. With 2 usual and 2 black mirrors, may serve for direct observation and for objective projection — Müller-Pouillet I. Fig. 568	1.	15.	—
847.	— do. fitted with self-interrupting electro-magnets for permanent vibrations	3.	14.	9
848.	— do. more simple, both springs are attached to a prisma and supplied with slitted disks in place of the mirrors — serves for direct observation and projection. — Müller-Pouillet I. Fig. 569	2.	15.	3
849.	— do. same, fitted for registering Lissajou's Curves, — Zeitschrift für Instrumentenkunde 1881, page 275	14.	7.	6
850.	**Pfaundler's Apparatus for showing how heterogeneous vibrations, which are swinging in a right angle, may be combined,** fitted for showing different intervals and phases. For direct observation and projection. — Müller-Pouillet I. Fig. 570	5.	15.	—
851.	— do. same Stöhrer's System, for direct observation, for projection with the Sciopticon and for registering. — Weinhold, Fig. 214	3.	15.	—
852.	— do. Eisenlohr's, consisting of 2 pendulas swinging upon another in two right angles, with stand. — Eisenlohr, Fig. 502	1.	14.	6
853.	— do. Weinberg's, consisting of a compound pendulum with dispersing-vessel — Humboldt March 1882	1.	3.	—

		£	Sh.	d.
854.	**Lissajou's Microscope for examining vibrations** — Müller-Pouillet I. Fig. 573	2.	1.	3
855.	— do. Helmholtz's, with electro-magnet for maintaining permanent vibrations. — Müller-Pouillet I. Fig. 629	7.	3.	9
856.	— do. Weinhold's, serves also as Toepler's Microscopes. — Weinhold, Fig. 219	5.	3.	6
857.	**Koenig's Phonautograph.** — Müller-Pouillet I. Fig. 577	5.	3.	6
858.	— do., fitted to register seconds, with coil-inductor and seconds-pendulum with stopper for interrupting the galvanic current	17.	5.	—
859.	— do. Helmholtz's with electro-magnets for maintaining permanent vibrations, with Helmholtz's interrupting fork, coil-inductor and second's pendulum — the latter fitted with stopper for interrupting the galvanic current	28.	15.	—
860.	— do. Scott and Koenig's for membrane vibrations with parabolical sound-funnel. — Müller-Pouillet I. Fig. 624	28.	15.	—



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No. 855.

861.	**Edison's Phonograph**	3.	9.	—
862.	— do. larger	8.	12.	6
863.	— do. with clock-work	17.	5.	—
864.	**Apparatus for making wood-rods vibrate** in longitudinal direction, consisting of 4 harmonically tuned rods mounted on one same support. — Müller-Pouillet I. Fig. 582	—.	6.	9
865.	— do. with 8 rods, which indicate the octave	—.	13.	9
866.	**Werthheim's Apparatus to make columns of liquids sound and vibrate.** — Müller-Pouillet I. Fig. 585	8.	12.	6
867.	**Tongue-Whistle** with beating tongue, glass-sides and sounding-cup	—.	13.	9
868.	— do. larger	—.	17.	3
869.	— do. with piercing tongue, small	—.	13.	9
870.	— do. with piercing tongue, larger	—.	17.	3
871.	— Tongue Whistle $c' = 64$ Vibrations with large sounding-cup and sliding prolongation, with 11 cylindrical board-resonators	2.	11.	9
872.	— do. with 25 cylindrical resonators of paste board	4.	—.	6
873.	— Vox humana	1.	—.	9
874.	— Tongue-Whistle with 2 tongues and two sounding-cups	2.	1.	3

£ Sh. d.

875. **Resonators.**

	11 pieces	25 pieces
spherical of metal	2. —. 3	4. 6. 3
conical of metal	1. 14. 6	3. 9. —
conical of paste board	1. 8. 9	2. 17. 6
cylindrical of metal	2. —. 3	4. 6. 3
cylindrical of paste board	2. 3. —	2. 11. 9

876. **Weinhold's Apparatus for the Upper-Tones,** consisting of a wind-chest with 10 tongue-whistles and automatical regulator. — It produces the note c' = 64 vibrations and its upper tones up to e'' = 640 vibrations — Weinhold, Fig. 204 . . . . . 4. 6. 3

1:10
No. 879.

1:10
No. 886.

877. **Membraneous Tongue-Whistle.** — Müller-Pouillet I. Fig. 598 . . . . . —. 5. 9

878. **Savart's Apparatus for showing how sound-vibrations are communicated between solid bodies** — Müller-Pouillet I. Fig. 601 . . . . . —. 8. 6

879. **Treveljan's Instrument** . . . . . —. 6. 9

C. Interference of the Waves of Sound.

880. **Interference-fork** . . . . . —. 8. 6

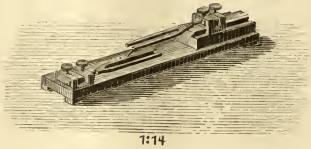
881. — do. with a sliding prolongating tube — Müller-Pouillet I. Fig. 607 —. 11. 6

882. **Nörrenberg's Interference-Tube.** — Müller-Pouillet I. Fig. 609 . . . . . 1. 14. 6

883. **Open Whistle,** with wind-regulator — Müller-Pouillet I. Fig. 610 . . . . —. 3. 3

884. — do. with Nörrenberg's permanent blower — Frick, Fig. 390 . . . . —. 11. 6

		£	Sh.	d.
885.	**Quincke's Interference-Tube.** — Müller-Pouillet I. Fig. 611	—.	4.	—
886.	— do. Kundt's with tube for dust-figures. — Müller-Pouillet I. Fig. 612	2.	1.	3
887.	— do. Weinhold's, Fig. 229	2.	1.	3



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No. 888.

888. **Apparatus for registering the vibrations of two tuning-forks.** — Müller-Pouillet I. Fig. 617 . . . . . 5. 3. 6

889. — do. fitted for perpendicular vibrations . . . . . 5. 15. —

D. Models made of paper maché of the Organs of Voice and Hearing.

890. **Model of the Larynx**, enlarged, showing also a part of the wind-pipe and of the scutiformed glandule, dissectible . . . . . —. 17. 3

891. — do. with tongue, both dissectible 1. 5. 9

892. **Model of the human ear,** considerably enlarged . . . . . 2. 6. —

893. — do. same without the outward part 1. 14. 6

894. — do. smaller, not dissectible . . . . . —. 13. 9

IV. Optics.

A. Propagation and Intensity of Light.

895. **Apparatus for showing, that light is transmitted in a straight line** — Müller-Pouillet II. 1. Fig. 10 . . . . . —. 1. 9

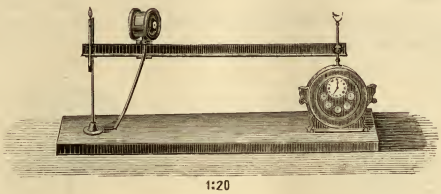
896. — do. Weinhold's, with a three-arm-light-holder, upon support. Weinhold, Fig. 235 . . . . . —. 11. 6

897. **Rumford's Photometer.** Müller-Pouillet II. 1. Fig. 15 . . . . . —. 8. 6

898. — do. Ritschie's. — Frick, Fig. 404 . . . . . —. 13. 9

899. — do. same as 898, but larger, to be risen or lowered . . . . . 1. 1. —

		£	Sh.	d.
	Photometer.			
900.	— do. Wheatstone's	1.	8.	9
901.	— do. Bunsen's, consisting of three support, two of them are supplied with light-holders, the third is fitted with a piece of oiled paper. These supports may be placed on the hereafter described optical banks	—.	17.	3



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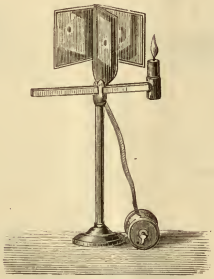
No. 903.

902.	— do. same as 901, complete with a graduated rail of $1^1/_{10}$ yards length	2.	1.	3



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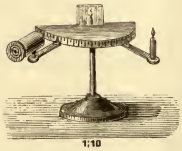
No. 905.

903.	— do. Bunsen's, modified by Desaga, with a standard candle and a sliding box, with oiled paper. This box contains a gas-lamp which may be regulated to any wished intensity. — With regulating clock. — The whole on a graduated rail. — Müller-Pouillet II. 1 Fig. 19	12.	18.	9
904.	— do. same as 903, but without regulating clock	4.	6.	3
905.	— Bunsen's Mirror-Photometer with stand and ribbon-measure	2.	1.	3

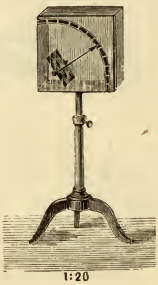
£ Sh. d.

B. Reflection of Light.

906. **Müller's Reflection-Apparatus.** — Müller-Pouillet II. 1. Fig. 22 . . . . . —. 13. 9
907. — do. larger . . . . . 1. 1. —
908. — do. new construction for objective demonstration — the room needs not to be darkened. . . . . 1. 15. —

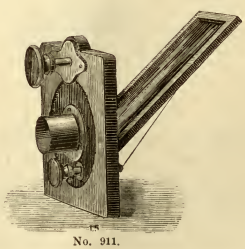


No. 908.



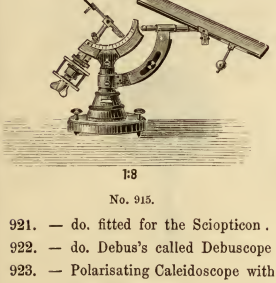
No. 910.

909. — do. Tyndall's for objective demonstration by the means of an heliostate or an intensive artificial light. — Müller-Pouillet II. 1. Fig. 23 . . . 1. 1. —
910. — do. same, new construction, to show the phenomenon also with a less intensive light and without the room being darkened . . . . . 2. 12. —


No. 911.

911. **Heliostate,** may be placed in a window. The mirror is moved by rack and pinion and an endless screw — of wood 1. 8. 9
912. — do. of brass 2. 15. 3
913. do. Mayerstein's with clock-work. — Müller-Pouillet II. 1. Fig. 37 . . . 5. 15. —
914. — do. Silbermann's clock-heliostate with one mirror. — Müller-Pouillet II. 1. Fig. 39 . . . . . 34. 10. —

		£	Sh.	d.
	Heliostate.			
915.	— do. Fuess's. — Report on the philosophical instruments of the Berlin Industrial Exhibition. Fig. 215	20.	15.	—
916.	— do. Johnston's. — Report on the philosophical instruments of the Berlin Industrial Exhibition. Fig. 217	10.	—.	—
917.	**Angular mirror**	—.	3.	3
918.	— do. with sextant	—.	9.	3
919.	**Caleidoscope,** simple	—.	3.	3
920.	— do. larger with stand . . . . . from 6/ to	1.	14.	6



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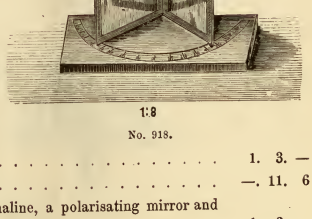
No. 915.



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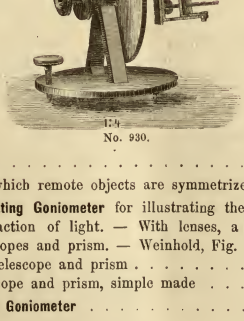
No. 918.

921.	— do. fitted for the Sciopticon	1.	3.	—
922.	— do. Debus's called Debuscope	—.	11.	6
923.	— Polarisating Caleidoscope with a turmaline, a polarisating mirror and plaster-objects	1.	3.	—
924.	— do. with Nicol's Prism	1.	8.	9



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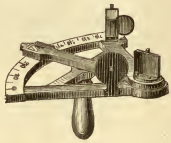
No. 930.

925.	**Anthoscope**	—.	17.	6
926.	**Aphaneidoscope,** by which remote objects are symmetrized	—.	17.	6
927.	**Weinhold's Demonstrating Goniometer** for illustrating the laws about reflection and refraction of light. — With lenses, a glass vessel for liquids, two telescopes and prism. — Weinhold, Fig. 239	18.	18.	—
928.	— do. but without telescope and prism	14.	7.	6
929.	— do. without telescope and prism, simple made	8.	12.	6
930.	**Wollaston's Reflecting Goniometer**	4.	6.	3

		£	Sh.	d.
	Wollastone's Reflecting Goniometer.			
931.	— do. with telescope	8.	—.	—
932.	— do. for the pocket	2.	12.	—
933.	— do. Babinet's — Müller-Pouillet II. Fig. 27	17.	5.	—
934.	**Mirror Sextant** with telescope, coloured glasses, exactly graduated, nonius and magnifying glass of best make	17.	5.	—
935.	— do., less exactly make and smaller	8.	12.	6
936.	— do. for the pocket, with a cylindrical brass-box	6.	18.	—
937.	— do. wooden model, graduated, with coloured glasses and diopter	1.	8.	9
938.	**Pistor's Reflecting Circle**, 6 Inch diameter, with 2 nonius, telescope, prism and glass diaphragms	13.	16.	—
939.	— do. wooden model for schools	4.	6.	3



1:3
No. 937.

1:10
No. 941.

940. **Spherical mirrors**, convex or concave, with frame and ball-hinge-stand

diameter	4	6	8	10	$11^1/_2$ Inch
brass	—. 9. 3	—. 12. —	—. 17. 3	1. 5. 9	1. 14. 6
german silver	—. 11. 6	—. 14. 9	1. —. 6	1. 9. 9	2. —. 3

941. — do. with glass on both sides, frame of black wood, with handle

diameter	4	$6^1/_2$	6 Inch
with 2 glasses	plain-concave	plain-concave	convex-concave
Price	—. 4. —	—. 6. 3	—. 10. 3

942. **Parabolical German-Silver Mirrors**

diameter	4	6	8	10	$11^1/_2$ Inch
Price	—. 5. 3	—. 8. 6	—. 17. 3	1. 8. 9	2. 1. 3

943.	**Cylindrical mirror** producing 12 images with glass mirror	—.	11.	6
944.	— do. with metal mirror	—.	13.	9
945.	**Conical mirror** producing 12 images, with glass mirror	—.	13.	9

£ Sh. d.

C. Refraction of Light.

946. **Müller's Apparatus for illustrating reflection.** — Müller-Pouillet II. 1. Fig. 62 — of varnished tin plate . . . . . —. 13. 9

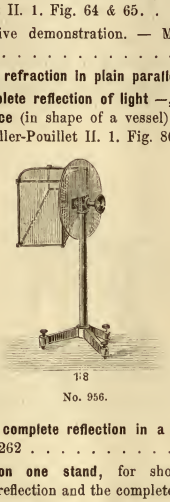
947. — do. made of brass . . . . . 1. 3. —

948. — do. Tyndall's, for objective demonstration by means of an intense light. — Müller-Pouillet II. 1. Fig. 64 & 65. . . . . 1. 3. —

949. — do. Mach's, for objective demonstration. — Müller-Pouillet II. 1. Fig. 64 & 65. . . . . 2. 11. 9

950. **Mechanism for showing the refraction in plain parallel glasses** . . . . . —. 8. 6

951. **Prism for showing the complete reflection of light —, without vertical edge, but with a curved surface** (in shape of a vessel) which is parallel to the front-surface — Müller-Pouillet II. 1. Fig. 80 . . . . . —. 2. 9



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No. 956.

952. **Mechanism for showing the complete reflection in a jet of water** — with lens — Weinhold, Fig. 262 . . . . . 1. 3. —

953. **Two right-angle prisms on one stand,** for showing the difference between the usual glass-reflection and the complete reflection — Müller-Pouillet II. 1. Fig. 77. . . . . 1. 14. 6

954. **Mechanism for showing that reflection ceases at the limits of media which hawe the same refracting power** . . . . . —. 4. 3

955. **Prism with variable angle,** for liquids, upon stand 4. 6. 3

956. **Silbermann's curved prism.** — Müller-Pouillet II. 1. Fig. 85 . . . . . 2. 11. 9

957. **Crystal-Glass-Prisms,** equilateral, each side measures 10 inches

length	4	6	8 Inch
without stand	—. 1. 3	—. 1. 9	—. 2. 9
with a simple stand	—. 4. 6	—. 5. 3	—. 6. 3

958. — do. with equal surfaces or rectangular, of flint or crown-glass, in the following sizes or in any other size at proportionate prizes

Length	8	12	16	20	20 Inches
Side	8	12	16	10	20 „
Price	—. 8. 6	—. 12. 6	—. 17. 3	—. 17. 3	1. 5. 9

Length	24	24	36 Inches
Side	12	24	18 „
Price	1. 3. —	1. 14. 6	2. —. 3

£ Sh. d.

Crystal-Glass-Prism.

959. — Stand for prisms. — Müller-Pouillet II. 1. Fig. 88. . . . . 1. 8. 9
On special demand prisms will be supplied also of Rock-Crystal, Uranium-Glass, rock-salt, Iceland crystal, fluor spar, turmalin et cet.

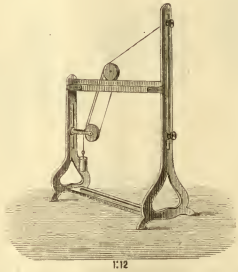
960. **Concave Prism** in form of a bottle with plain-parallel glass-plates-cemented upon another, for bi-sulphurat of carbon or aqueous liquids . . . . —. 13. 9

961. — do. Meyerstein's, with perforated glass-body and glass-plates which are holdes by springs — Upon Stand

for	1	2	3	liquids
Price	30/	40/	48/	

962. — Steinheil's, without frame, the plain-parallel covering plates which adhere to another by mere adhesion, aperture 8 Inch os . . . . . 5. 15. —

963. — do. Biot's and Arago's for determining the co-efficient of the refraction of gases with manometer on an iron stand — Müller-Pouillet II. 1. Fig. 104 . . . . . 2. 11. 9



No. 971.

964. **Dulong's Apparatus for determining the coefficient of the refraction of gases,** with prism, manometer, slit and telescope with stand. — Müller-Pouillet II. 1. Fig. 106 . . . . . 6. 18. —

965. **Two cemented and ground prisms of crown- and flint-glass,** for showing the different refraction of both media-upon stand 1. 7. 6

966. — do. without stand, but with handle . . . . . 1. —. 6

967. — three prisms cemented upon another of different kinds of glass — Upon stand 2. 1. 3

968. — do. same with stand, but with handle 1. 14. 6

969. **Mechanism for explaining, that the deviation cannot be extended beyond a certain limit and that the angle of reflexion depends upon the angle of incidence** — Pfaundler's System — Müller-Pouillet II. 1. Fig. 97 . . 1. 3. —

970. **Movable Model of Reusch's Construction for showing the refraction light** — Weinhold, Fig. 260 . . . . . —. 11. 6

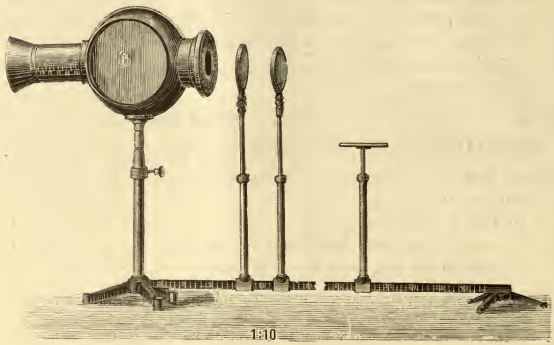
971. **Mach's Apparatus by means of which the refraction may be mechanically imitated.** — Carl's Repert. IV. pag. 375 — Müller-Pouillet II. 1. Fig. 369 1. 3. —

		£	Sh.	d.
	Apparatus by means of which the refraction may be mechanically imitated.			
972.	— do. Stöhrer's, the imitation is performed by prisms and lenses — Müller-Pouillet II. 1. Fig. 370	—.	13.	9
973.	**Patterns of ground lenses,** 6 different ones each of 2 Inch diameter: bi-convex, bi-concave, plain-convex, plain-concave, periscopic-convex, periscopic-concave, in box	—.	11.	6
974.	— do. framed, with handle and box	—.	18.	3
975.	— do. framed, with supports to be risen or lowered	1.	14.	6
976.	— Wood-Patterns of the above mentioned 6 lenses, diametral sections of 4 Inch. diameter	—.	13.	9
977.	**Lenses,** — prices are varying according to size and focus.			
978.	**Cylindrical Lens** upon stand, may be moved to any side	—.	13.	9
979.	**Optical Bank,** wooden rails of $3^1/_4$ feet length, graduated on both sides, upon iron feet	—.	16.	3
980.	— do. same $6^1/_2$ feet long	1.	3.	—
981.	— do. same $9^3/_4$ feet long, dissectible in two parts	1.	12.	3
982.	— do. same 13 feet long, dissectible in two parts	2.	1.	3
	Fittings for the optical bank. — The lenses, mirrors etc. are fitted with supports, which may be placed upon the optical bank and risen or lowered. — Each accessory may be supplied also without stand, only with tacks — the price of each accessory is then 5/ cheaper.			
983.	— Light-holder for one candle	—.	8.	6
984.	— do. „ 3 candles	—.	11.	6
985.	— Argand's gas-burner	—.	11.	6
986.	— Parrafine-lamp, flat burner	—.	13.	9
987.	— do., round burner	—.	16.	3
988.	— do., duplex burner, giving a most intense light	1.	3.	—
989.	— three bi-convex lenses of different focus, diameter 3 Inch	1.	8.	9
990.	— do. same, diameter $1^1/_2$ Inch	1.	—.	3
991.	— bi-concave lens, diameter 3 Inch	—.	11.	6
992.	— do., diameter $1^1/_2$ Inch	—.	8.	—
993.	— four convex and one concave lens, with such focus, that they may serve for explaining the astronomical, dutch and terrestrial telescope and the compound microscope — diameter of the lenses 3 Inch	2.	6.	—
994.	— do., $1^1/_2$ Inch diameter	1.	11.	6
995.	— German silver concave-mirror, 4 Inch diameter	—.	11.	6
996.	— German silver convex mirror, 4 Inch diameter	—.	11.	6
997.	— Black screen with two fittings, sz. an adjusting slit and a diaphragm perforated in shape of a arrow	1.	—.	3
998.	— White transparent screen	—.	8.	6
999.	— Diaphragm with oil-spot-serves for illustrating Bunsen's Photometer.	—.	8.	—
1000.	— Equilateral Prism	—.	11.	6
1001.	— Table upon which prisms e. c. t. may be placed	—.	8.	6

£ Sh. d

1002. **ZWick's Lens-Apparatus** for illustrating the action of convex and concave lenses, the Camera Obscura, the human eye and the action of spectacles 4. 12. —

A full description of this apparatus and of the experiments to which it may serve, will be sent on demand.



No. 1002.

1003. **New Optical Apparatus,** by which the phenomena of reflexion and refraction may be shown in such manner, that the rays of light are rendered visible . . . . . 11. 10. —

This apparatus consists of a box, $1^1/_{10}$ yard long, the fore- and back-sides of which are formed by glass-plates. — The box may be turned on a horizontal axis, supports for lenses etc. can be attached on the bottom. The fore-side is graduated for reading the position of lenses. A second box with circular division on the fore-side serves for determining the proportions of refraction of two different media. — The apparatus is supplied with different lenses, a mirror, a concave cylindrical lens, a concave prism and other accessories. — It may be used with sun-light or with any intense artificial light, the room needs not to be completely darkened. — The cases are filled with smoke or fluorescing liquids to make visible the rays of light. — A full instruction for use will be supplied with each apparatus.

£ Sh. d.

D. Divergence of Colours produced by Prisms.

1004. **Coloured disks,** to be placed upon any rotating mechanism

Set of	7	14	21
	—. 2. 3	—. 3. —	—. 5. 3

1005. — Small rotating machine for coloured disks with horizontal turning axle —. 12. --

1006. — Clock-Work for quick rotation 2. 1. 3

1007. — Electro-magnetic motor for quick rotation . . . . . 2. 6. —

1008. — do. as 1007, but smaller 1. 8. 9

1:6
No. 1006.

1:20
No. 1010.

1:8
No. 1016.

1009. **Stöhrer's Münchow Oscillating Prism** for mixing the colours of the Spectrum 2. —. 3

1010. **Apparatus by means of which the divided colours of the Spectrum may be united again** — this apparatus consists of 7 plain mirrors placed on a stand and moveable to any sides 2. 17. 6

1011. — do. with 3 mirrors 1. 8. 9

1012. **Conical-Lens** of crystal-glass upon support, for producing a round spectrum 2. —. 6

1013. — do. of flint-glass . . . . . 2. 6. —

1014. **Reusch's Apparatus for explaining the arch-form of the rain-bow** — Frick, Fig. 451. . . . . —. 11. 6

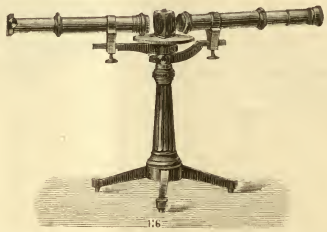
1015. — do. larger and more elegant. . . . . —. 17. 3

1016. **Achromatic** Prism upon support, consisting of a crownglass- and a flint-glass-prism, with hinge 2. 1. 3

1017. — do. larger 2. 15. 3

1018. **Weinhold's Apparatus for illustrating the achromatic prism and the right-view-prism,** it consists of three prisms upon stand. — Weinhold, Fig. 269 2. 15. 3

		£	Sh.	d.
1019.	**Achromatic lens** on a support, it consists of a crown- and a flint-glass-lens which may be combined by a hinge	—.	17.	3
1020.	— do. same, larger	1.	8.	9
1021.	**Mechanism for the objective illustration of Fraunhofer's Lines**, it consists of a flint-glass-prism of about $1^1/_2$ Inch length and an achromatic lens of about $2^1/_2$ Inch diameter — both on one same support.	2.	17.	6
1022.	**Meyerstein's Spectrometer.** Diameter of the circle about 4 Inches, it indicates single minutes	9.	15.	6



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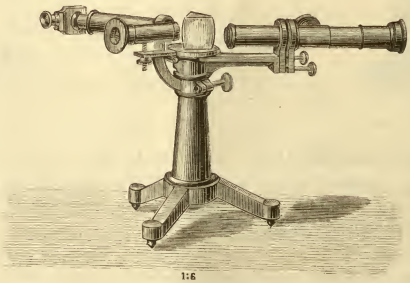
No. 1027.

1023.	— do. with a circle of about $6^1/_2$ Inch. diameter, it indicates half minutes	20.	14.	—
1024.	— do. with a circle of about 13 Inch., the exterior circle is supplied with 2 microscopes and indicates single seconds, the interior circle has 2 nonius and indicates 30 seconds. — With 2 telescopes, and a special ocular for the opake observation of the lease et cet.	60.	7.	6



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No. 1031.

1025.	**Mousson's Spectroscope**, simplest pattern, Carl's Rep. I. pag. 73	1.	8.	9
1026.	— do. upon support	2.	1.	3
1027.	— Spectroscope with slit and observing tube, upon iron stand	2.	15.	3
1028.	— same as 1027, but with a comparing prism	3.	9.	—
1029.	— Spectral-Apparatus with 3 telescopes, (slit, scale, observing tube) on iron stand	5.	3.	6
1030.	— do. same as 1029, with a comparing prism	6.	6.	6
1031.	— do. Bunsen's with a heavy flintglass-prism of about 2 Inch. length, with slit, scale, observing tube and comparing prism — Müller-Pouillet II. 1. Fig. 178	13.	16.	—

£ Sh. d.

Spectroscope.

1032. — do. Kirchhoff's, with 4 prisms, the telescopes have an aperture of about $1^1/_2$ Inch, their magnifying power is from 40 to 60 — Müller-Pouillet II. 1. Fig. 182 . . . . . 41. 8. —

1033. — as 1032, the prisms are moved automatically . . . . . 50. —. 6

1034. — Browning's Pocket-Spectroscope à vision directe, with 3 prisms. . . 1. 7. 6

1035. — do. upon stand 2. 1. 3

1036. — Pocket-Spectroscope à vision directe with 5 prisms 2. 1. 3

1037. — do. with stand 2. 15. 3

1038. — Jansen-Hoffmann's large Spectroscope à vision directe with 5 prisms 2. 15. 3

1039. — do. with comparing prisms . . . . . 3. 9. —

1040. — Jansen-Hoffmanns large Spectroscope à vision directe with scale and comparing prism on stand — Müller-Pouillet II. 1. Fig. 184 . . . . 13. 16. —

1041. — Vogel's Universal-Spectral-Apparatus, it consists of a pocket-spectroscope & of a reflecting prism with stand and several holders — H. W. Vogel, Practical Spectral Analysis of terrestrial objects . . . . . 4. 12. —

1042. — Sorby's Microspectroscope, to be placed upon the tube of a microscope. — Müller-Pouillet II. 1. Fig. 190 . . . . . 2. 11. 9

No. 1045.

No. 1048.

No. 1052

Accessories for Spectral-Apparatus.

1043. — Bunsen's Gas-Burner with stop-cock, ventilator, star and chimney . —. 8. 6

1044. — do. with stand to be risen or lowered . . . . . —. 11. 6

1045. — Breitenlohner's Spirit-lamp, with Bunsen's Burner, prolongating-tube and safety-valve . . . . . —. 17. 3

1046. — Glass-tubes with platina-wire fused into the glass . . . . . —. —. 6

1047. — Support for the glass-tubes . . . . . —. 2. —

1048. — Tergume's Gas-Lamp for monochromatical-light, with a six-arms-star to hold the glass-tubes, with platina-wire fused into the glass . . . 1 —. 6

1049. — Mitscherlich's Apparatus for permanent spectra with 8 glass-tubes and platina-wick, with support. — Schellen, Fig. 93 . . . . . —. 13. 9

1050. — Support with coals for examining the spectra of sparks, with a revolving mechanism, by means of which 6 different substances may be examined one after the other immediately 2. 15. 3

1051. — Delachanal and Mermet's Spark-tubes, for producing spectra by means of the induction-coil — Weinhold, Fig. 267 . . . . . —. 2. 9

1052. — do. same with stand to be risen and lowered . . . . . —. 11. 6

		£	Sh.	d.
	Accessories for Spectral-Apparatus.			
1053.	— Apparatus for examining the induction-coil jumping between metal-points and strengthened by the Leyden-flask	2.	17.	6
1054.	— Spectral Tubes filled with gases or vapour's from —. 3. 6 to	—.	6.	9
1055.	— Support for the tubes	—.	13.	9
1056.	— Chemicals for spectral-essays, — 6 bottles in a box	—.	6.	9
1057.	— do. with 10 chemicals	—.	13.	9
1058.	— Flask with parallel walls, to observe the observing stripes, 6 in a box	—.	9.	3
1059.	— do. same, with 9 flasks	—.	13.	9
1060.	— do. same, with 12 flasks	—.	18.	3
1061.	— Tubes with glass-stoppers and ground ends, 1, 2, 4, 6 Inches long	—.	2.	3
1062.	— Vessel with plain-parallel walls to observe the absorption of liquids, with support to be risen or lowered	—.	17.	3
1063.	— Vessel for observing the absorbent stripes of gases, with support to be risen and lowered, with a lateral opening — Müller-Pouillet II. 1. Fig. 204	1.	14.	6
1064.	— Mechanism for observing the changes of spectra by reflection — Müller-Pouillet II 1. Fig. 205	—.	11.	6
1065.	— Bunsen's Apparatus for inverting the Natrium-line. — Müller-Pouillet II. 1. Fig. 217	—.	13.	9
1066.	— Weinhold's Apparatus for the objective representation of Chemical Spectra — Weinhold, Fig. 266	1.	3.	—
1067.	**Spectral-Table,** containing the spectra of Ka. Rb. Cs. Fl. Na. Li. Ca. Sr. Ba.	—.	6.	9
1068.	— do. containing the Spectra of In. C. Bo. Mn. Pb. Cu. Co. Ni. Fe.	—.	6.	9
1069.	— do. containing the Spectra ot several fixed stars	—.	6.	9
1070.	— do. same on thick board with rings for suspending each table more	—.	3.	3

E. Fluorescence, Phosphorescence and Chemical Action of Light.

1071.	**Vans of plate-glass** with parallel walls for examining fluorescent, aqueous or ethereous liquids — 4 in a box	1.	—.	3
1072.	**Dice or plate of Uranium-glass** from —. 5. 9 to	—.	11.	6
1073.	— do of didym-glass from —. 11. 6 to	1.	3.	—
1074.	— do. of fluor-spar from —. 14. — to	1.	8.	9
1075.	— Three dice of uranium-glass, didym-glass and fluor-spar, fluorescing in green, red and blue colour, in box	2.	—.	3

		£	Sh.	d.
1076.	**Apparatus for essays about fluorescence** — it consists of 4 different glass-vessels with plain-parallel walls of plate-glass, dice and plate of uranium-glass, dice of didym-glass and fluor-spar, with collecting lens on support	3.	9.	—
1077.	**Collection of fluorescing liquids** in box, fitted in such manner, that they may be observed in reflected and not reflected light — 5 liquids	—.	11.	6
1078.	— do. with 10 different liquids	1.	3.	—
1079.	— do. with 15 different liquids	1.	14.	6
1080.	**Paper-stripes,** prepared with barium-platina-cyanure or Kalium-platina-cyanure	—.	2.	9
1081.	**Type of barium-platina-cyanure,** in box, of blew or yellow glass	—.	5.	3
1082.	**Babo's lamp to be filled with bi-sulphuret of carbon**	—.	3.	3
1083.	**Apparatus for observing the fluorescing-spectrum of the electric coil,** with quartz-prism, lens and uranium-glass-plate upon stand — Müller-Pouillet II. 1. Fig. 233	5.	15.	—
1084.	**Geissler's fluorescing-tubes,** with different fluorescing-liquids, from —. 3. 6 to	1.	3.	—
1085.	— do., with double walls and with lateral tube to be filled with any fluorescing liquids from —. 3. 6 to	1.	—.	3
1086.	**Phosphorescing tubes,** giving different light, 3 pieces in a box	—.	6.	9
1087.	— do. 6 pieces in a box	—.	17.	3
1088.	**Phosphorescing substances,** 7 of 7 different tints, with box	1.	—.	3
1089.	— do. 16 of 16 different tints, in 2 boxes	2.	6.	—
1090.	**Becquerel's Phosphorescope.** — Müller-Pouillet II. 1. Fig. 236	6.	18.	—
1091.	— do. Müller's, to be placed on the centrifugal-machine — Müller-Pouillet II. 1. Fig. 240	1.	3.	—
1092.	**Phosphorescent painting colour** — mixed with oil . . . . . per pound	—.	5.	9
1093.	— do. mixed with water . . . . . per pound	—.	5.	9
1094.	**Gas-Clock painted with phosphorescing colour**	—.	1.	9
1095.	**Sensitized Photographic Paper,** permanent . . . . . one sheet	—.	1.	3

F. The Eye and the optical Instruments.

1096.	**Model of the human eye,** of ivory and glass, dissectible in all its parts	—.	17.	3
1097.	— do. made of papier-maché, 5 fold enlarged, dissectible in the single parts	1.	13.	3
1098.	— do., of three-fold life-size	—.	11.	6

		£	Sh.	d
1099.	**Optical Model of the eye,** for illustrating sight, with 2 different spectacle-glasses, for explaining short-sighted and far-sighted eyes, with wooden-support	—.	13.	9
1100.	— do. on brass-stand	1.	—.	6

N. B. No. 1002 Zwick's Lens-Apparatus is peculiarly suitable for explaining the human eye and the action of spetacles.

1101.	**Beetz's Eye-Model,** to illustrate the mechanism of accomodation. — Carl's Repertorium II. pag. 302	2.	11.	9
1102.	**Stand for displaying & experimenting on the eye of an ox**	—.	5.	3
1103.	**Steinhauser's Mechanism for Scheiner's Essay.** — Müller-Pouillet II. 1. Fig. 250.	—.	5.	9

No. 1099.

1104.	**Stampfer's Opfometer** for measuring the visual distance	1.	14.	6
1105.	— do. quite simple, Frick Fig. 459	—.	13.	9
1106.	**Mechanism for explaining, that seeing with 2 eyes is a correct means to estimate distance.** — Müller-Pouillet II. 1. Fig. 255 & 256	—.	1.	9
1107.	**Wheatstone's Mirror-Stereoscope,** with 6 pairs of geometrical designs	1.	—.	6
1108.	— do same with support	1.	8.	9
1109.	**Brewster's dioptric Stereoscope,** simplest making . . . from —. 1. 9 to	—.	5.	3
1110.	— do., more elegant and with the optical parts more perfect, of mahogany, rose-or else-wood . . . . . from 5/9 to	1.	14.	6
1111.	— do. American Pattern, open and dissectible.	—.	7.	6
1112.	— do. Revolving Stereoscope for 25 or 50 pictures, of mahogany from 2. 17. 6 to	3.	9.	—
1113.	**Stereoscope-Photographs,** on paper and glass, largest collection at cheapest prices.			
1114.	— stereometric designs for the Stereoscope, 6	—.	5.	3
1115.	**Frick's Simple Mechanism for contemplating stereoscopic pictures** — Müller-Pouillet II. 1. Fig. 266	—.	5.	3
1116.	**Plateau's Disks to illustrate Irradiation** — Müller-Pouillet II. 1. Fig. 269 & 270	—.	3.	3
1117.	— do. fitted for the Sciopticon	—.	3.	3

		£	Sh.	d.
1118.	**Mechanism to illustrate the irradiation of the crescent,** may be used with the Sciopticon. — Weinhold, Fig. 284 & 285	—.	8.	—
1119.	**Illustration of the optical illusion,** may be used with the Sciopticon. — Weinhold, Fig. 284 & 285	—.	8.	—
1120.	**Thaumatrope** with 12 pictures	—.	2.	—
1121.	**Stroboscopic disk** with Müller's undulating pictures. — Müller-Pouillet II. 1. Fig. 274	—.	18.	3
1122.	— do. with support, may be employed without mirror. — Frick, Fig. 467 & 468	1.	5.	9
1122a.	— do. with handle, to use with a mirror — Frick, Fig. 465 & 486	—.	5.	3
1123.	**Weinhold's Stoboscope** fitted for the Sciopticon — Weinhold, Fig. 275 — with 4 glass-disks	1.	3.	—
1124.	**Zootrope** with support, with Quincke's designs	—.	13.	9
1125.	— do. to be placed on the Centrifugal-machine	—.	13.	9
1126.	**Plateau's Anorthoscope,** with 12 designs	1.	—.	6
1127.	— do. fitted for the Sciopticon	1.	3.	—
1128.	**Mechanism for showing, that the feeling for clearness diminishes, when an eye is submitted to the continuous action of light and that by this phenomenon a successive contrast is produced** — fitted for being used with the Sciopticon — Weinhold, Fig. 279 & 280	—.	4.	3
1129.	**Nörrenberg's Mechanism for explaining the subjective colours.** — Frick, Fig. 451, 452, 453	—.	10.	3
1130.	— do. with stand. Müller-Pouillet II. 1. Fig. 277	—.	13.	9
1131.	— do. fitted for the Sciopticon. Weinhold, Fig. 281	—.	3.	—
1132.	**Mechanism for showing coloured shadows** — to be placed before the opening of the heliostate or the sciopticon-lens	—.	1.	3
1133.	**Mechanism for showing the contrasting colours** with several coloured glasses. — Müller-Pouillet II. 1. Fig. 279	—.	8.	6
1134.	— do. larger	—.	11.	6
1135.	**Camera obscura** with a lens fitted with rack and pinion mirror and ground glass-plate. — Müller-Pouillet II. 1. Fig. 282 —.14.—, 1.—.9 or	1.	7.	6
1136.	— do. fitted for drawing, with a lens fitted with rack and pinion and a mirror. — Müller-Pouillet II. 1. Fig. 283	4.	6.	3
1137.	— do. as 1136, with a Chevallier's prism with convex polished surfaces in place of the lens and mirrors	5.	3.	6

1138. **Photographic Apparatus,** for scientific and technical purposes suitable for all Climates

Size of plates	3 × 4 Inch £ Sh. d.	7 × 9 Inch £ Sh. d.	8 × 10 Inch £ Sh. d.
Else-Wood-Camera with dark-slide for 1 plate	1. 14. 6	5. 10. 3	6. 4. 3
Aplanatical Lens with 5 diaphragms	3. 5. 6	8. 1. —	8. 1. —
Printing-frame for paper-pictures	—. 2. —	—. 10. 3	—. 12. —
3 Papier-Maché-Plates	—. 8. 6	1. 4. 3	1. 12. 9
Dark-room Lantern	—. 17. 6	1. —. 9	1. —. 3
complete £	6. 8. —	16. 6. 6	17. 10. 3

£ Sh. d.

Photographic Apparatus.

1139. — the same, easey portable and specially arranged for travellers et cet.

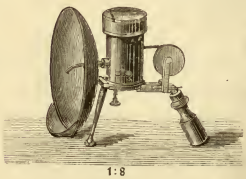
Size of plates	3 × 4 Inch	7 × 9 Inch	8 × 10 Inch
	£ Sh. d.	£ Sh. d.	£ Sh. d.
Mahogany-Camera with one double-dark-slide for 2 plates	4. —. 6	7. 9. 6	8. 12. 6
Folding stand, with bag	1. 11. —	1. 14. 6	1. 18. —
Aplanatical Lens with 5 diaphragms.	3. 5. 6	8. 1. —	8. 1. —
Printing-Frame for paper-pictures	—. 2. 3	—. 10. 6	—. 12. 3
3 papier-maché-Plates	—. 8. 6	1. 4. 3	1. 12. 9
Dark-room-Lantern	—. 17. 3	1. —. 6	1. —. 6
complete £	10. 5. —	20. —. 3	21. 17. —

Full instruction for making negetives and printing copies will be furnished with each apparatus. — They are fitted to use with dry-plates.

Accessories for the above mentioned apparatus:

Size of plates	3 × 4 Inch	7 × 9 Inch	8 × 10 Inch
	£ Sh. d.	£ Sh. d.	£ Sh. d.
1140. — Bromide of silver-Gelatine-Dryplates 10 in packet	—. 4. 3	—. 13. 9	1. —. 3
1141. — Permanent sensitized Albumine-Paper 24 sheets	—. 1. 6	—. 8. —	—. 8. 6

All other Photographic Apparatus, Accessories, Chemicals etc. furnished at moderate prices to order.



1:8

No. 1153.

1:8

No. 1155.

1142. — Neutral oxalate of potash . . . . . per pound —. 4. 6
1143. — Sulphate of Iron . . . . . „ —. —. 9
1144. — Hyposulfite of Potash . . . . . „ —. —. 9
1145. — Fixing-salt for paper-prints . . . . . „ —. 1. —
1146. **Wollaston's Camera lucida** with stand . . . . . 1. 11. —
1147. — do. with coloured glasses and two lenses 2. 1. 3
1148. — do. Amici's with one prism and a plain parallel-mirror 2. 1. 3
1149. — do. Sömmering's for placing on a microscope. — Müller-Pouillet II. 1. Fig. 286 . . . . . —. 17. 3
1150. — do. Nobert's, for placing on a microscope. — Müller-Pouillet II. 1. Fig. 287 . . . . . 1. —. 6
1151. — do. Nachet's, for same purpose. — Müller-Pouillet II. 1. Fig. 288 . 1. 8. 9
1152. **Lamp for Magnesium-Light** with clock-work and concave mirror 2. 11. 9
1153. — do. with arrangement to unwind the magnesium-wire equally. . . . 3. 9. —
1154. — do. larger with 2 magnesium-wires. . . . . 4. —. 6
1155. — do. with arrangement to unwind the magnesium-wire equally. . . . 4. 17. 9

£ Sh. d.

Magnifying Glasses

1156. — in horn-cell . . . . . —. 1. 3

1157. — do. „ with two plain-convexe lenses . . . . . —. 3. —

1158. — for botanists, in horn-cell with dishes

fitted with	1	2	3 lenses
diameter of the lens about $^1/_2$ Inch	—. 1. 6	—. 2. 9	—. 3. 6
„ „ $^5/_6$ „	—. 1. 9	—. 3. —	—. 4. 3
„ „ 1 „	—. 2. 4	—. 3. 9	—. 4. 9
„ „ $1^1/_4$ „	—. 2. 6	—. 4. 9	—. 6. —
„ „ $1^1/_2$ „	—. 3. —	—. 5. 3	—. 7. 6
„ „ $1^2/_3$ „	—. 4. —	—. 6. —	—. 8. 3

1159. — do. in brass-cell, on tripod-stand, with adjusting screw and 2 bi-convex lenses of about $1^1/_6$ Inch diameter . . . . . —. 2. 3

1160. — Cylindric Magnifying Glass, without cell . . . . . —. 2. —

1161. — do. without cell . . . . . —. 2. 6

1162. — Coddington's Magnifying-Glass with ground diaphragm . . . . . —. 3. 6

1163. — do. achromatic, in brass-cell, with one lens. . . . . —. 4. 3

1164. — do. „ „ with two lenses and a handle . . . . —. 6. 9

1165. — do. with two lenses and ball-hinge-stand, prices varying according to size . . . . . from —. 17. 3 to 1. 8. 9

1166. — do Brücke's System, achromatic, with large distance of focus . . . 1. 14. 6

1167. — do. same with stand . . . . . 2. 6. —

Simple microscope.

1168. — Microscope for preparations, achromatic with 3 objectives of 15, 25 and 40 fold magnifying power. 2. 12. 9

Compound Microscope.

1169. — Cylindrical-Stand with sliding tube. With 1 pincette, 1 testing-preparation, and 2 object-holders in a box. 1 objective-lens, 1 ocular, not achromatic. Linear-Magnifying power 50 fold . . . . . —. 10. 3

1170. — with small horse-shoe-stand, sliding tube, micrometric screw, turning plain-mirror, diaphagm, 2 objective-lenses, achromatic ocular of 80 and 160 fold magnifying power, with pincette, testing-preparation, object-glasses & covering-glasses, in wooden-box. . . . . 1. —. 6

1171. — do. same as foregoing, but larger, with concave mirror, 2 objectiv-lenses, 1 achromatic ocular of 100 and 200 fold enlarging power. With accessories in box. With sliding tube 1. 14. 6

1172. — do. especially suitable for controlling meat and testing food. With 2 objective-lenses, 1 achromatic ocular of 100 and 200 fold magnifying power. — With accessories in wooden-box. — With sliding tube . . 1. 8. 9

1173. — do. same as before, the tube fitted with rack & pinion. 1. 14. 6

1174. — do. Horse-shoe-Stand, micrometric screw, turning diaphragm, concave and plain mirror, 3 objective-lenses, 1 ocular. — Enlarging power 50—200 fold. — With accessories and wood-box. 2. 3. 3

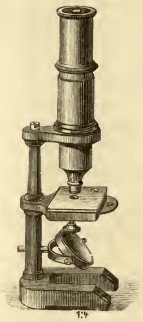
1175. — do. With Horse-shoe-stand, fine adjusting screw, with 3 objective-lenses and 2 oculars, concave and plain mirror. Enlarging power 30 to 300 fold. With accessories in box 4. 6. 3

1176. — do. With Horse-shoe-stand, fine adjusting screw, concave and plain-mirror, diaphragm, system No. 4 & No. 7, 2 oculars. Enlarging power 20 to 500 fold. — With accessories and box 4. 6. 3

£ Sh. d.

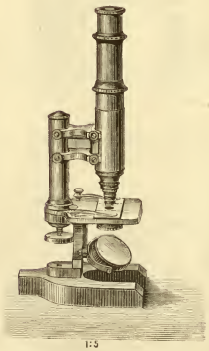
Compound Microscope.

1177. — With Horse-shoe-stand, rack- and pinion, fine adjusting screw at the table, concave and plain mirror, diaphragm. May be folded. With 3 objective lenses and 2 oculars. Enlarging power 50 to 300 fold. With accessories and box . . . . . 3. 9. —

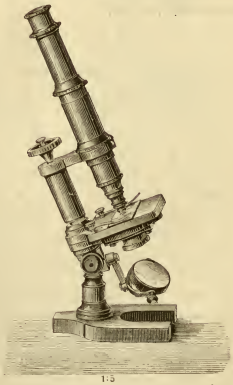


No. 1170.

1178. — With Horse-shoe-stand, the mirror may be moved horizontally, with cylindric diaphragms and micrometric screw at the tube. With systems 4, 7, 9 and 3 oculars. Enlarging power 30 to 700 fold. With accessories and box 7. 3. 9



No. 1178.



No. 1180.

1179. — do. With Horse-shoe-stand, mirror movable in horizontal direction, cylindrical diaphragm with sledge, micrometric screw at the column. — May be folded — Ocular-Micrometer $^1/_{20}$ line, system 4, 7, 10 and 3 oculars. Enlarging power 30—800 fold. — With accessories in box 11. 15. 9

£ Sh. d.

Compound Microscope.

1180. — do. With Horse-shoe-stand, mirror movable in horizontal direction, cylindrical diaphragm with sledge, large rotating table, micrometric screw at the column. — May be folded — with ocular-micrometer, systems 4, 7, 9, 10 and 3 oculars. — Enlarging power 20—1200 fold. — With accessories in box . . . . . 18. 8. —

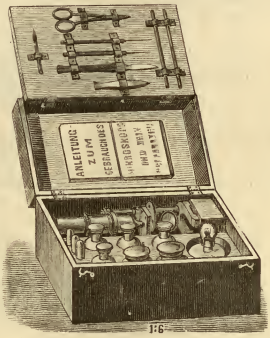
1181. — do. as No. 1180, but with system No. 11 (immersion) and ocular No. 4. Enlarging power 20—2000 fold 20. 2. 6

1182. — Microscope for Lectures — to be used like a telescope, with 3 objective-lenses and 1 ocular. Magnifying power 50, 100 and 150 fold 2. 1. 3

1183. — do. with 2 objective-lenses and 1 ocular. Magnifying power 30 and 100 fold 1. 14. 6

1:4

No. 1182 u. 1183.



1:6

No. 1185.

1184. — do. Kloenne's and Müller's System, with large object. table turning around the column, 8 preparations may be placed at once on the table. With 2 objectives and 2 oculars. Magnifying power 30—600 fold 10. 7. —

1185. **Microscopical Case**, containing: 1 microscope No. 1170, 1 preparing knife, 1 pair of bent scissors, 1 pincette, 2 glass-rods, 1 brush, 2 porcelain-dishes 12 covering glasses, 1 ground object-holder, 1 testing-object, 3 bottles with chemicals, 1 alcool-lamp, Canadian-balm, asphalte-varnish, dest. water, benzine, caustic potash and alcool (in glasses with ground glass-stopper). With instruction for the use of the microscope and for making microscopical preparations. In polished wood-box . . . . . 2. 6. —

Accessories and Utensiles for Microscopic Observation.

1186. — Reversing Ocular. . . . . —. 17. 3

1187. — Ocular-Micrometer, to be placed in any ocular, each millimeter is divided into tenths . . . . . —. 4. —

1188. — do. the millimeter is divided into twentieths . . . . . —. 6. 9

1189. — Objective-Micrometer, 1 millimeter is divided into 100th . . . . . —. 11. 6

1190. — do. 1/2 „ „ 100th . . . . . —. 17. 3

1191. — do. 1/4 „ „ 100th . . . . . 1. 3. —

£ Sh. d.

Accessories and Utensiles for Microscopic Observation.

1192. — Lens for lightening on stand . . . . . —. 5. 3, —. 6. 9, —. 10. 6 or —. 13. 9

1193. — Table for preparations, the preparations may be moved automatically. — Report on the Scientific Instruments on the Berlin-Industrial-Exhibition of 1879. Fig. 156 . . . . . 2. —. 3

1194. — do. the preparation may be moved automatically on two different ways — Report on the Scientific Instruments on the Berlin-Industrial-Exhibition 1879. Fig. 157 . . . . . 2. 11. 9

1195. — Schultze's heating table for preparations, with thermometer . . . . 2. 6. —

1196. — Compressorium 1. 5. 9

Micro-Spectroscope see No. 1042, polarisation-apparatus for microscopes see No. 1271 & 1272, Drawing-prisms see No. 1146—1151.

1197. — Object-holders

	$15/8 \times 11/8$	$21/2 \times 3/4$	3×1 inch	
of Rhenish glass with ground-border	—. 2. 9	—. 3. —	—. 3. 3	for 100 glasses
do. with polished border	—. 4. —	—. 5. 3	—. 6. 9	
of finest plate-glass with ground edges	—. 6. 3	—. 7. 6	—. 10. —	
do. with polished edges	—. 7. 3	—. 7. 9	—. 12. —	

1198. — Glasses for preparations, dimpled

	1	2	3	dimples
with price	—. 3. 3	—. 4. 6	—. 5. 3	

1199. — Covering glasses of finest English glass, square

3/8	1/2	5/8	11/16	inch
—. 1. —	—. 1. 3	—. 1. 6	—. 2. 3	for 50 pieces.

1200. — do. same, round

3/8	1/2	5/8	11/16	3/4	inch diameter
—. 1. 9	—. 2. —	—. 2. 9	—. 3. 6	—. 4. 6	for 50 pieces.

1201. — Turning disk for making varnished rings on preparations . . . . . —. 11. 6

1202. — Labels for preparations. 100 . . . . . —. —. 9

1203. — Boxes, for 50 preparations

	of board	of else-wood	of mahogany-wood
each	—. 2. 9	—. 4. —	—. 5. —

Larger Cabinetts of any size to order.

1204. — Preparing needles with ebony-handle

with straight	bent	lancet-like	harpon-like point
—. 1. 3	—. 1. 6	—. 1. 6	—. 1. 9

1205. — Preparing knife with ebony-handle . . . . . —. 2. —

1206. — Shaving knife . . . . . —. 4. 3

1207. — Valentin's or Harting's double-knife . . . . . —. 4. —

1208. — Scissors with

straight-	bent-point
—. 2. 3	—. 3. —

1209. — Microtome, for cuts of determined thikness and any wished fineness Micrometric screw with divided drum, glass-clock to make the cut, knife and box . . . . . —. 1. 3

1210. — Brass-Pincette . . . . . —. —. 6, —. —. 9 or —. 1. 3

1211. — do. of steel with polished points . . . . . —. 1. 6 or —. 2. —

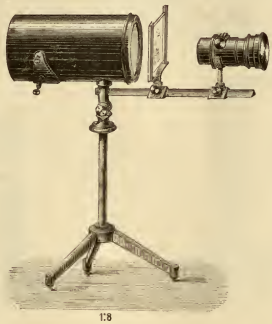
1212. — do. of steel with chanelled points and adjusting-slider

with straight,	with bent points
—. 4. —	—. 5. 3

1213. — Dust- and Varnishing-Brush . . . . . —. 1. —

1214. — Glass-Rod . . . . . —. —. 6

		£	Sh.	d.
	Accessories and Utensiles for Microscopic Observation.			
1215.	— Case of instruments for making microscopical preparations, —: one Valentin's double knife, 2 preparing knives, 4 needles, 1 pincette, 2 scissors in leather box	—.	9.	3
	All chemicals for microscopic researches will be supplied at lowest prices.			
	Apparatus for Projection.			
1216.	**Solar-Microscope,** with achromatic lenses and heliostate, microscope tube of stout board, the body of the heliostate made of wood	4.	6.	3
1217.	— do., entirely of metal, with rack and pinion	8.	12.	6
1218.	— do. with larger lenses and micrometric screw	10.	7.	—
1219.	— do. same as 1218, but combined with apparatus for polarization, interference and diffraction of light — at prices varying from 14. 7. 6 to	34.	10.	—



No. 1228.

1220. **Magic Lantern,** in varnished tin-plate box, paraffine-lamp with round burner and silver-plated reflector, the lens with rack and pinion adjustment Diameter of the lens

22	24	36	42	48 lines
1. 5. 9	1. 8. 9	1. 14. 6	2. 6. —	2. 17. 6

1221.	**Sciopticon,** an improved Magic Lantern with double-flame paraffine-burner, large lightening lenses and achromatic object lenses	6.	15.	6
1222.	— do. with stand, serves also for the projection of physical and chemical experiments. — Müller-Pouillet II. 1. Fig. 334	7.	3.	9
1223.	— **prolongating tube** for the projection of microscopic objects, with object-table screw and pinion	2.	11.	9
1224.	— **prolongating tube** for the projection of horizontal objects. Weinhold, Fig. 77	7.	9.	6
1225.	— Prolongating apparatus for the Sciopticon, for projecting opaque bodies	4.	6.	3
1226.	**Projection Apparatus,** same as No. 1221, but fitted with an automatically regulating arch. lamp for electric light	7.	15.	3
1227.	— do. as 1222, but with an automitically regulating arch. light-lamp	8.	12.	6
1228.	— do. as 1222, but fitted with an incandescent lamp for electric light, may be turned, for horizontal and vertical projection	6.	18.	—

£ Sh. d.

Projections-Apparatus

1229. — do. as 1222, but with lime-light-lamp for oxygen, hydrogen and coal gas — or oxygen and alcohol . . . . . 8. 1. —

For producing the electric light I recommend Grove's or Bunsen Elements, and more especially my dynamo-electric Hand-Machine A.

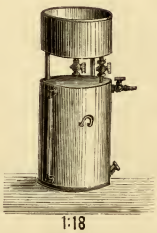
1230. **Iron-retort** for making oxygen with tripod-stand and gas- or parafine-lamp —. 13. 9 or —. 17. 3

1231. **Apparatus for making hydrogen** . . . . . —. 8. —, —. 12. 6 or 4. 6. 3

1232. **Glass-Gasometer** with brass fittings . . . . . 3. 9. —

1233. — do. of varnished tin-plate 2. 11. 9

No. 1232.



No. 1233.

1234. **India-Rubber-Bag** with cock, containing about 12 galloons 2. 1. 3

1235. — do., containing about 24 galloons . . . . . 2. 6. —

1236. **Press for the Bags** . . . . . —. 17. 3

1237. — Curtain of Shirting, about 6 feet square . . . . . —. 6. 9

1238. **Frame for the Curtain** . . . . . —. 8. 6

The apparatus, which are especially fitted for projection, are mentioned at the respective chapters.

Glass-Photographs for projection apparatus from all Scientific Branches as Physics, Astronomy, Mineralogy, Botany, Zoology, Geograghy, ancient History etc., Views of countries, cities, monuments, sculptureswill be supplied at a moderate cost.

Telescopes.

1239. — small Gallilei's Telescope with achromatic object lens and concave ocular —. 8. 6

1240. — achromatic telescope with terrestrial ocular and 3—6 prolongating tubes, varying according to size . . . . . from —. 13. 9 to 6. 18. —

1241. — Telescope with brass-stand, may be used vertically and horizontally, with terrestrial and astronomic oculars, varying according to size and make . . . . . from 3. 9. — to 23. —. —

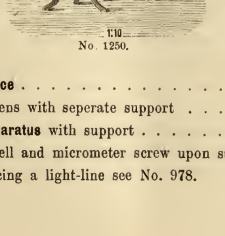
	£	Sh.	d.
1242. **Open Model of a compound Microscope**	—.	11.	6
1243. **Open Model of Galilei's Telescope**	—.	8.	6
1244. **Open Model of an astronomic Telescope**	—.	8.	6
1245. **Open Model of a terrestrial-Telescope**	—.	11.	6

No. 1242.

1246. **Model of Newton's Mirror-Telescope**	—.	17.	3
1247. **Model of Herschel's Mirror-Telescope**	—.	17.	3
1248. **Model of a Brachy-Telescope**	1.	3.	—
1249. **Model of a Meridian-Circle,** entirely of wood	2.	11.	9

G. Interference and Diffraction of Light.

1250. **Fresnel's Mirror-Apparatus,** with 2 black plain-mirrors and micrometric screw with coloured glasses placed on a support, also with linear slit, upon seperate stand	2.	15.	3



No. 1250.

1251. **Prism to show interference**	—.	13.	9
1252. — do. with stand and lens with seperate support	1.	—.	6
1253. **Figeau's Interference Apparatus** with support	1.	14.	6
1254. **Billet's Lens** with lens-cell and micrometer screw upon support	2.	1.	3

Cylindric-Lens for producing a light-line see No. 978.

		£ Sh. d.
1255.	**Diffraction-Apparatus,** consisting of an achromatic telescope with support, some slits, apertures and grates	4. 17. 9
1256.	— do., more complete, the slit being fitted with micrometer screw and graduated screw-knob, also with glass-grate, double-grate, double slit etc.	12. 1. 6
1257.	**Diaphragm** with one or more fine apertures, slits or double-slits, with frame, fitted for being adapted to the object lense of a telescope . .	—. 5. 9
1258.	**Movable Slit** with exactly graduated micrometer screw, with frame, may be placed in front of the telescope-object lens	1. 5. 9
1259.	**Screen with stand** and with turning diaphragm, with 6 different apertures and slits.	—. 13. 9
1260.	— do. on stand, with slit fitted with a fine micrometer screw	1. 8. 9
1261.	**Wire-grate,** of different thickness . . . . . from —. 1. 9 to	—. 11. 6

1262. **Glass-grate,** 1 Square Centimeter (about $^1/_2$ Square Inch) divided into

100	150	200	250	300	400
—. 10. 3	—. 14. 9	—. 19. 6	1. 5. 3	1. 11. —	2. 1. 3
500	600	800	1000	1200	1600
2. 11. 9	3. 2. 3	3. 9. —	3. 17. —	4. 2. 9	4. 12. —

3200 6400 parts
5. 3. 6 6. 18. —

1:6
No. 1264.

1263.	**Grates photographed on glass,** of different fineness . . from —. 8. 6 to	1. 14. 6
1264.	**Illustration of Newton's Coloured Rings,** with brass-fittings and press-screw —. 12. —, 1. —. 6, 1. 7. 6 or	1. 14. 6
1265.	**Eisenlohr's Mechanism for observing Newton's rings in thin pellicles at the surfaces of liquids,** may be placed on the centrifugal machine . . .	—. 10. 3

H. Polarization and double Refraction of Light.

1266.	**Simple Polarizing Apparatus,** may be placed on the centrifugal machine. Müller-Pouillet II. 1. Fig. 406 — By means of this apparatus the difference of polarized and not polarized light may be shown simultaneously to a large number of pupils	1. 3. —
1267.	— do. Duboscq's may be placed on front of a projection apparatus — Müller-Pouillet II. 1. Fig. 407	1. 3. —
1268.	**Nörremberg's Polarizing Apparatus,** of simplest kind, consisting of a frame and 2 black mirrors, the upper of which may be turned	2. 1. 3
1269.	— do. with glass-clock-analysator	2. 8. 3

£ Sh. d.

Nörremberg's Polarizing-Apparatus,

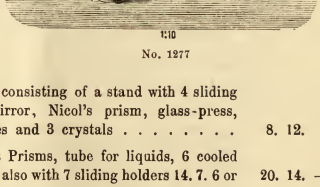
1270. — do., on mahogany-box with 1 black mirror, glass-plate-analysator, Nicol's prism, glass-table, holder for crystals, graduated disc and turning table, 2 lenses, 6 glasses (cooled), 6 crystals, 1 plaster-figure, 8 thin plates of gypsum, 1 gypsum-wedge, 1 quartz turning to left and to right, 1 press with 2 glasses, 1 glass-tube for fluids . . . . 10. 7. —

1271. **Lang's Microscopical Polarizing-Apparatus**, with large field of view — Müller-Pouillet II. 1. Fig. 505 . . . . . 10. 7. —

1272. — do. Hofmann's, complete. Müller-Pouillet II. 1. Fig. 506 . . . . . 8. 12. 6

1:8

No. 1270.



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No. 1277

1273. **Dove's Apparatus to show Polarization,** consisting of a stand with 4 sliding holders, graduated disc, black mirror, Nicol's prism, glass-press, crystal-holder with 4 cooled glasses and 3 crystals 8. 12. 6

1274. — do., more complete, with 2 Nicol's Prisms, tube for liquids, 6 cooled glasses, 6 crystals, glass-press et cet. also with 7 sliding holders 14. 7. 6 or 20. 14. —

1275. — do. Seebeck's model, with 2 black mirrors, one of which may be turned, with stand, 3 cooled glasses and glass-holder 1. 14. 6

1276. — do. with graduated disc and Nicol's prism, with 3 cooled glasses, 3 crystals and glass-holder 4. 17. 9

1277. — do. Mach's, with rotating analysator. — Müller-Pouillet II. 1. Fig. 513 with 2 Nicols prism, right-view-prism, quartz-plate, glass-press . . . 6. 18. —

1278. **Lang's Projection Apparatus to show Polarization.** — Müller-Pouillet II. 1. Fig. 511 . . . . . 8. 6. 9

		£	Sh.	d.
1279.	**Soleil-Scheibler's Polarizing Apparatus for sugar-analysis,** consisting of the complete apparatus with scale graduated in 100 ths. and nonius, magnifying mirror, 2 observing tubes of about 8 and 4 Inch length, in mahogany-box	22.	2.	9
1280.	— do. with 4 observing tubes of about 24, 16, 8 and 4 Inch lenght	24.	8.	9
1281.	**Jelett-Corny Half-Shade or Penumbral Polarizating-Apparatus** with wedge-compensator, consisting of the complete apparatus with scale divided into 100 ths. and nonius with magnifying mirror, 2 observing tubes of 8 and 4 Inch length, complete in mahogany-box	22.	14.	3
1282.	**Hoppe-Seiler's Polarizing Apparatus for analysis of saccharine and urine,** with brass-column and two observing tubes, complete in mahogany-box 12. 13. 9 or	16.	13.	6
1283.	— do. **for the analysis of wines, which have been treated with saccharine (Gall's method),** with an examining tube of 8 Inch length, complete with accessories and a mahogany-box	3.	9.	—
1284.	— do. Mitscherlich's with an observing tube of 8 Inch length	3.	9.	—
1285.	— do. with a shadow-plate	6.	12.	3

No. 1279.

No. 1293.

No. 1294.

1286.	**Wild's Polaristrobometer,** improved construction, with 3 observing-tubes of 9, 8 and 4 Inch length, alcool-or gas-lamp fitted for homogeneous light, with telescope- indicator, complete in a mahogany-box										18.	2. 3
1287.	— do., smaller and more simple, with 2 observing-tubes of 1 and 2 Inch length, with magnifying glass										8.	6. 9
1288.	**Observing Lamp,** for oil and paraffine with glass- and clay-cylinder										—.	16. 3
1289.	— do. for gas										—.	18. 3
1290.	**Observing tubes** with frame, covering-glasses and India-Rubber-rings											
	long	1		2		4		8		16		24 Inch.
	of glass	—. 10. 3		—. 10 3		—. 10. 3		—. 10. 3		—. 11. 6	—.	13. 9
1291.	— of brass	—. 11. 6		—. 11. 6		—. 11. 6		—. 11. 6		—. 12. 6	—.	14. 9
1292.	**Stöhrer's Polarizing Apparatus fitted for the Sciopticon** — Weinhold, Fig. 293										5.	15. —
1293.	**Turmalin-Tongs** with 2 turmalin-plates, to show the coloured rings in crystal-plates —. 13. 9, 1. —. 6 or										1.	7. 6
1294.	— do. same, arranged in such manner, that the turmalins may be moved in long parallel line from another										1.	11. —
1295.	— do. Bertin's, with lens-system for a large field of view, and with graduated polarizer										3.	2. 3

		£ Sh. d.
1296.	**Babinet's Compensator,** in brass-frame, with rack and pinion and with graduated circle	5. 9. 3
1297.	**Fresnel's Parallelepiped,** with frame . . . . . 1. 7. 6 or	2. 1. 3
1298.	**Loyd's Apparatus for conical refraction**	1. 5. 3
1299.	**Bresina's Stauroscope**	4. 6. 3
1300.	**Glass-Press** to press the glass . . . . . —. 13. 9 or	—. 17. 3
1301.	— do. for bending the glass . . . . . —. 13. 9 or	—. 17. 3
	Crystal-Plates in cork-frames.	
1302.	— (with one axis) positive, ground in a line perpendicular to the axis, amethyst, prussiate of potash, brucit, dioptas, parisit, quartz, smoke-quartz, hyposulfite of potash, tin-stone, zirkon etc. from —. 2. 9 to	1. —. 6
1303.	— Crystals with one axis, negative: Arragonit, Beryl, Calcareous Spar, Kalium, Copper, Chloride, Cyanure of Potash, Chlorate of Potash, Phosphate of Amonium, Rubin, Saphire, Nitrate of Soda, Sulphite of Nickel, Emerald, Turmaline et cet. . . . . from —. 1. 9 to	—. 17. 3
1304.	— Crystals with two axis: Adular, Arragonit, Baryte, Borax, Bichromate of Potash, Glauberit, Mica, Gypsum, Nitrate of Potash, Sulphate of Copper, Hyposulphite of Soda, Tartrate of Potash, Sugar et cet from —. 1. 9 to	—. 17. 3

1305. **Nicol's Prisms,**

size about	2	3	5	7	10 lines
price	—. 7. —	—. 10. 6	1. —. 9	2. 1. 6	4. —. 6

size about	12	14 lines
price	6. 6. 6	9. 4. —

1306. **Rhomboids of Calcareous Spar,**

size about	5/6	1	1 1/6	1 1/2	2 Inches
price	—. 17. 3	1. 3. —	1. 10. —	2. 11. 9	3. 14. 9

1307.	**Dies of Calcareous Spar,** perpendicular and parallel to the axis —. 13. 9 to	1. 3. —
1308.	**Plate of Calcareous Spar,** between 2 glass prisms, showing from one side rings and from the other side the double refraction . . —. 8. 9 to	—. 17. 3
1309.	**Arragonit,** showing both system of rings without polarizing apparatus —. 13. 9 to	1. 3. —
1310.	**Double Plate of quartz turning to the left and right**	—. 10. 6
1311.	**Thin Plate of mica** for observing Talbot's lines. . . . . —. 8. 9 to	—. 17. 3
1312.	**Collection of 7 plates of quartz,** showing the colours of the Spectrum, from 1. 14. 6 to	2. 17. 6
1313.	**Wedges of Gypsum**	—. 17. 3
1314.	**Plates of Gypsum of 1/4, 3/4 and 9/4 length of wave,** — 13 different retartations of waves may be produced by superposing alternatively one plate upon the other, with brass-frame, price per set from —. 13. 9 to	1. 8. 9
1315.	**Plates of Mica** — of 1/4 undulation — serve for examining the double refraction in single-axis-crystals . . . . . —. 2. 3, —. 3. 6 or	—. 5. 9
1316.	**Noerrenberg's Combination of Mica-Plates,** for showing, how single-axis-mica is produced from a two-axis-one . . . . . set of 6 pieces	1. 8. 9

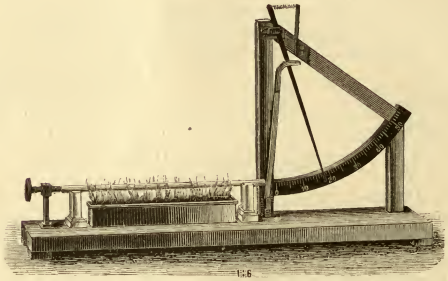
£ Sh. d.

V. Heat.

A. Extension by heat.

1317. **Cylindrical Vessel for determining the freezing-point on thermometers.** Müller-Pouillet II. 8. Fig. 3 with a filled thermometer-tube . . . . . —. 8. 9

1318. **Apparatus for determining the boiling point,** with filled-thermometer-tube. — Müller-Pouillet II. 2. Fig. 4 . . . . . —. 7. —



No. 1325

1319. — do., with double walls, manometer and filled thermometer-tube. — Müller-Pouillet II. 2. Fig. 5 . . . . . —. 17. 3

1320. **Standard-Thermometer** with opal-glass-scale + 100° Celsius
each degree is divided into $^1/_5$ ° . . . . . 1. —. 9
each degree is divided into $^1/_{10}$ °. 1. 7. 9

1321. **Chemical Thermometer** with scale edged on the tube, graduated into $^1/_1$ °

from — 10 to + 100 °	to 250 °	to 300 ° Celsius
—. 5. 9	—. 7. —	—. 8. 9

Thermometers for usual purposes, window-thermometers, house-thermometers etc., filled with mercury or alcool, are supplied in various patterns and at wholesale prices. — See also chapter Metereology.

1322. **Réaumur's, Celsius' and Fahrenheit's Thermometer.** Scale, on wood, with opal glass-scale. . . . . —. 4. —

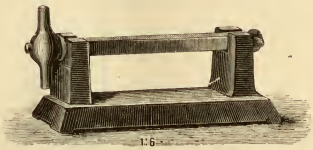
1323. **Small Thermometer** with plate-glass-scale, the numbers written inverted for the Sciopticon . . . . . —. 4. 6

1324. **Muschenbrock's Lever-Pyrometer,** simple. Müller-Pouillet II. 2. Fig. 8, 9 . . . . . —. 10. 6 or —. 13. 9

1325. — do., with 3 different rods of metal and with alcool lamp 1. 7. 6 or 2. 1. 6

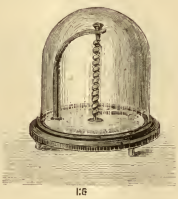
		£	Sh.	d.
1326.	— do., in finest execution, with mirror, suitable for exact measuring. — Müller-Pouillet II. 2. Fig. 11. — with oil bath	2.	11.	9
1327.	**Apparatus for determining the co-efficient of extension,** with 6 different metal-rods 1. 8. 9 or	2.	6.	—
1328.	— do., Weinhold's model, with 3 metaltubes, each 3½ feet long fitted for the Sciopticon. — Weinhold, Fig. 303	3.	9.	—
1329.	— **S'Gravesande's Pyrometer,** to show the extension of solid bodies. — Consisting of ball and ring, of metal	—.	5.	3
1330.	— do., with stand and lamp	—.	17.	3

No. 1331.



No. 1332.

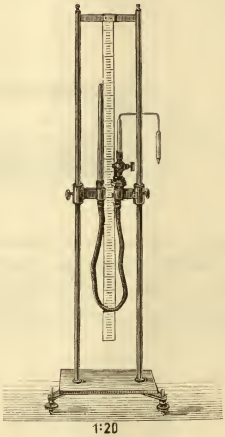
1331.	**Apparatus for showing the action of steam in steam-engines** —. 4. — or	—.	5.	9
1332.	**Tyndall's Apparatus for showing the violent contraction produced by the cooling of heated bodies.** — Müller-Pouillet II. 2. Fig. 16 — with alcool-lamp	—.	19.	—
1333.	— do., with 4 Bunsen-burners (Fig. 1339)	1.	6.	—



No. 1339.

1334.	**Strips of iron and brass,** riveted together, to show the unequal extension of these metals	—.	3.	—
1335.	**Model of a rust pendulum** — Müller-Pouillet II. 2. Fig. 18 from —. 10. 3 to	1.	8.	9
1336.	**Hermann & Fister's Metal-Thermometer,** with maximum- and minimum-indicator. — Müller-Pouillet II. 2. Fig. 21	1.	16.	9
1337.	— do., with electric contact	2.	1.	6
1338.	— do., shape of a watch, in nickelled case	1.	14.	6
1339.	— do., Breguet's, with spiral of platinum, gold and silver. — Müller-Pouillet II. Fig. 23	1.	14.	6
1340.	— do., with hold-screws for the galvanic current	2.	1.	6

		£	Sh.	d.
1341.	**Apparatus for determining the co-efficient of the extension of mercury** — Weinhold, Fig. 306	2.	11.	9
1342.	— do, **Dulong & Petits**, suitable for exact measurings, with kathetometer. — Müller-Pouillet II. 2. Fig. 28	14.	7.	6
1343.	**Regnault's Dilatometer.** — Müller-Pouillet II. 2. Fig. 32	—.	12.	—
1344	**Weight Thermometer, simple.** Müller-Pouillet II. 2. Fig. 33	—.	3.	—
1345.	— do., Gay-Lussac's- Müller-Pouillet II. 2. Fig. 34.	—.	5.	9
1346.	**Water-Thermometer**, with graduated scale and comparing scale.	—.	13.	9
1347.	**Glass-Cylinder** with 2 lateral thermometers and one vessel for ice, serves for showing the stratification of water according to its specific weight. Müller-Pouillet II. 2. Fig. 47	—.	9.	3



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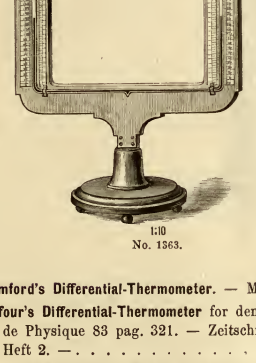
No 1357.

1348.	**Apparatus for determining the greatest density of water.** — Weinhold, Fig. 307 —	1.	—.	9
1349.	**Cold-Water-Swimmer.** Ball of brass, which swims in cold water and sinks down in warm water —. 3. — or	—.	5.	3
1350.	**Mechanism for showing the circulation of heated water**, consisting of a glass-tube bent in a right angle	—.	7.	6
1351.	— do., smaller and on stand, with lamp and fitted for projection	—.	5.	3
1352.	**Apparatus for showing the extension of air, if submitted to a constant pressure.** Weinhold, Fig. 311	1.	14.	6
1353.	— do., fitted for projection. — Weinhold, Fig. 310.	1.	—.	9
1354.	— do., Regnault's, for exact measurings. — Müller-Pouillet II. 2. Fig. 57	6.	18.	—
1355.	**Apparatus for determining the co-efficient** of the extension of gases, if submitted to a constant pressure	—.	10.	6
1356.	— do., combined with Feilitzsch's Apparatus for proving Mariotte's law, serving at same as air-thermometer	1.	3.	—

		£	Sh.	d.
1357.	**Jolly's Air-Thermometer,** simplest construction on wood-stand	3.	14.	9
1358.	— do., Pfaundler's improved system, on an iron stand. — Müller-Pouillet II. 2. Fig. 73	5.	15.	—
1359.	— do., Weinhold's, especially suitable as demonstrating-thermometer for schools — Weinhold, Fig. 313.	9.	4.	—
1360.	— do , Riess's — Weinhold, Fig. 421 —	2.	6.	—
1361.	— do , Rudberg's — Müller-Pouillet II. Fig. 64	3.	2.	3
1362.	**Leslie's Differential-Thermometer.** Müller-Pouillet II. 2. Fig. 76	—.	11.	6
1363.	**Schumann's** do. The balls of this differential-thermometer are surrounded by vessels, which serve for receiving liquids. — With special instruction.	1.	—.	3



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No. 1363.

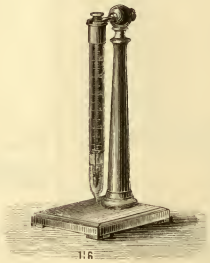
1:8
No. 1365.

1364.	**Rumford's Differential-Thermometer.** — Müller-Pouillet II. 2. Fig. 77 . .	—.	11.	6
1365.	**Dufour's Differential-Thermometer** for demonstrating purposes. — Journal de Physique 83 pag. 321. — Zeitschrift für Instrumentalkunde 1884 Heft 2. —	2.	1.	6
1366.	**Pfaundler's Double-Vessel-Air-Thermometer.** Müller-Pouillet II. 2. Fig. 79.	—.	12.	—
1367.	**Glass-Balloon with stop-cock for determining the specific weigth of gases** Müller-Pouillet II. 2. Fig. 81	—.	17.	3

B. Changes of the State of Aggregation.

1368.	**Freezing-Thermometer** on stand . . . . . —. 8. 6	—.	17.	3
1369.	— do., smaller and with a transparent scale for projection	1.	—.	9
1370.	**Hugi's Apparatus for proving, that freezing of water may be retarded by pouring oil on the surface.** — Müller-Pouillet II. 2. Fig. 86.	—.	8.	6

		£	Sh.	d.
1371.	**Small Rod of Wood's Metal** — melting at about 65° Cels.	—.	2.	3
1372.	**Iron-Sprinkling-Ball to show, that freezing water changes its volume** . .	—.	2.	6
1373.	**Moussons Apparatus for proving, that Ice at low temperature may be made liquid by strong pressure.** — Müller-Pouillet II. 2. Fig. 93	2.	1.	6
1374.	**Grubeaud's Freezing-Apparatus,** to be experimented with by dissolving Nitrate of Amonium. Müller-Pouillet II. 2. Fig. 102	2.	17.	6
1375.	**Apparatus for showing the elasticity of different vapours,** consisting of 3 barometer-tubes with stand and mercury-trough. — Müller-Pouillet II. 2. Fig. 102	2.	17.	6
1376.	**Apparatus for showing the difference of gases and vapours.** — Müller-Pouillet II. 2. Fig. 193.	1.	8.	9
1377.	**Steam-Barometer,** Apparatus for measuring the elasticity of saturated steam of water at different temperatures. — Weinhold, Fig. 317 . .	1.	11.	—



No. 1368.

1378.	**Dalton's Apparatus for measuring the elasticity** of saturated steam of water at temperatures between 0° and 100° — Müller-Pouillet II. 2. Fig. 115.	3.	2.	3
1379.	— do., Gay-Lussac's for measuring the elasticity of vapours under 0° .	2.	15.	3
1380.	— do., Schmidt's for determining the elasticity of water vapours below the boiling temperature	1.	3.	—
1381.	— do., Regnault's for the temperatures from 0° — 50°. — Müller-Pouillet II. 2. Fig. 120	8.	12.	6
1382.	— do., Magnus's. — Müller-Pouillet II. 2 Fig. 119.	10.	7.	—
1383.	— do., Weinhold's, for measuring the elasticy of steam in a space filled with air — for ethereous vapours. — Weinhold, Fig. 325 —	—.	17.	3
1384.	— do., Weinhold's, for measuring the elasticity of steam in a space filled with air — for steam of water. — Weinhold, Fig. 326	—.	12.	—
1385.	**Papin's pot,** iron made. . . . . —.	8.	9 or	—. 13. 9
1386.	— do., made of copper, with thermometer, safety-valve and tripod-stand	2.	1.	6
1387.	— do., same as 1386, but with a manometer	2.	15.	3
1388.	**Apparatus for showing the equilibrium of the elasticity of vapours** in communicating vessels which are heated in unequal manner. — Müller-Pouillet II. 2. Fig. 127	—.	12.	—
1389.	— do., with stand	1.	—.	9

		£ Sh. d.
1390.	**Gay-Lussac's Apparatus for proving Dalton's Principle,** that saturated steam has the same maximum of elasticity in a space filled with gas, as in the vacuum	—. 17. 3
1391.	— do., with stop-cock. — Müller-Pouillet II. 2. Fig. 128	1. 6. —
1392.	— do., Frick's, Müller-Pouillet II. 2. Fig. 130	—. 8. 6
1393.	**Mechanism for determining the boiling point of fluids,** with thermometer — Müller-Pouillet II. 2. Fig. 135	—. 8. 6
1394.	**Apparatus for demonstrating Leydenfrost's essay,** consisting of a platinum-cup with stand	1. —. 9
1395.	— do ; with a copper-cup	—. 13. 9
1396.	**Liebig's Cooling Apparatus,** made of glass. — Müller-Pouillet II. 2. Fig. 139 —. 13. 9 or	1. 3. —
1397.	— do., of brass —. 19. —, 1. 8. 9	1. 14. 6
1398.	**Ice-Apparatus,** for making ice in a rarefied space by means of ether 1/6 or	—. 2. 6
1399.	— do., Leslie's, for making ice in a rarified room by means of sulfuric acid. — Müller-Pouillet II 2. Fig. 140	—. 4. —
1400.	— do., Weinhold's, serves also for explaining Carré's Ice-Machine. — Weinhold, Fig. 348 —	1. 3. —
1401.	— do., as 1400, but with stand and thermometer	1. 14. 6
1402.	**Carré's Sulfuric-Acid-Ice-Machine,** with air-pump. — Müller-Pouillet II. 2. Fig. 141 — from 9. 4. — to	15. 10. 6
1403.	— do., for ammonia-gas. — Müller-Pouillet II. 2 Fig. 146 with furnace and cooling-vessel from 2. 17. 6 to	8. 12. 6
1404.	**Wollaston's Kryophor.** — Müller-Pouillet II. 2. Fig. 142	—. 2. 6
1405.	do, with cylindrical condensating-vessel. — Weinhold, Fig. 350	—. 2. 6
1406.	**Water-hammer.** — Frick, Fig. 842. — —. 1. 9 or	—. 3. 6
1407.	**Pulse-Hammer.** — Frick, Fig. 844 —. 1. — or	—. 1. 9
1408.	**Gay-Lussac's Apparatus for determining the density of vapour.** — Müller-Pouillet II. 2. Fig. 147	2. 15. 3
1409.	— do., Hoffmann's, complete with cooling apparatus and mechanism for minute reading. Müller-Pouillet II. 2. Fig. 148	4. 6. 3
1410.	— do., Dumas's — Müller-Pouillet II. 2. Fig. 150 1. 14. 6 or	2. 6. —
1411.	**Weinhold's Apparatus for the essays with saturated and over-heated steam** — Weinhold, Fig. 321	3. 15. —
1412.	**Weinhold's Apparatus showing that ice evaporates, when being in vacuo** — Weinhold, Fig. 352	—. 11. 6
1413.	— do. with heating by means of the galvanic current — Weinhold, Fig. 353	—. 16. 6
1414.	**Natterer's Compression-Apparatus,** for compressing carbonic acid — with 2 bottles essayed at 130 atmospheres — Müller-Pouillet II. 2. Fig. 156	38. —. —
1415.	**Andrew's Press for condensing gases,** for projection, Weinhold, Fig. 327	1. 3. —
1416.	**Tube filled with liquid carbonic acid** — the quantity of carbonic acid is so small, that the tube appears empty at usual temperature and that the liquid carbonic acid becomes only visible, when cooling	—. 17. —
1417.	— do. containing 2—5 Cubic Centimeter liquid carbonic acid at usual temperature and appearing empty again, if warmed with the hand	1. 3. —

£ Sh. d.

Tube filled with liquit carbonic acid

1418. — do. half filled with carbonic acid, to show the great movableness of the liquid . . . . . 1. 2. —

1419. — do. containing so much carbonic acid, that the latter fills the whole tube, when heated to 25° Celsius . . . . . 1. 15. —

1420. **Faraday's Mechanism to make mercury freeze in a glowing crucible by means of condensed carbonic acid** — Müller-Pouillet II. 2. Fig. 162 1. 1. — or 2. 12. 6

1421. **Apparatus to make mercury freeze by means of liquid sutphurous acid** — Weinhold, Fig. 361 . . . . . —. 17. 6

1422. — do. Weinhold, Fig. 362 . . . . . —. 14. —

1423. **Moulds for the recongelation of ice,** of box-wood in iron-trimming, in form of cylinders, balls or cups, Weinhold, Fig. 363, 354 and 365 . . . . —. 17. 6

1424. **Weinhold's Mechanism for fusing a loaded wire by means of an ice-block** 1. 3. —

C. Calorimetry.

1425. **Tyndall's Apparatus** to prove the relative warmness of different metalls, with 5 different balls — Müller-Pouillet II. 2. Fig. 173 . . . . . —. 11. 6

1426. — do. Weinhold's Fig. 343. . . . . 1. 2. —

1427. **Lavoisier's Ice-Calorimeter.** — Müller Pouillet II. 2. Fig. 179 2. 2. — or 2. 12. 6

1428. — do. Bunsen's. Müller-Pouillet II. 2. Fig. 176 . . . . . —. 15. —

1429. — do. Reichert's for lectures. Carl's Rep. XII. pag. 77 . . . . . 2. 17. 6

1430. **Weinhold's Calorimeter,** with warming vessel and testing ball. Weinhold, Fig. 344 & 345. . . . . —. 7. 6

1431. **Double Calorimeter.** — Demonstrating Apparatus to compare rapidly the specific warmness of two bodies, with 2 thermometers graduated into $^1/_{10}$° 4. 5. —

1432. **Regnault's Steam-Heating-Apparatus.** — Müller-Pouillet II. 2. Fig. 179. . 1. 2. 6

1433. — do. serves for larger quantities. Müller-Pouillet II. 2. Fig. 182. . . 14. —. —

1434. do., Neumann's. Müller-Pouillet II. 2. Fig. 184 . . . . . 3. 7. 6

1435. **Kopp's Apparatus for determining the specific warmnes of liquids by means of the mixing method** — Müller-Pouillet II. 2. Fig. 186 and 187. . . 1. 15. —

1436. **Andrew's Calorifer,** modified by Pfaundler — Müller-Pouillet II. 2. Fig. 192 —. 7. —

1437. **Pfaundler's Apparatus for determining the specific warmness of liquids by means of the electric current.** — complete with 2 thermometers divided into $^1/_{10}$°. — Müller-Pouillet II. 2. Fig. 193 . . . . . 10. —. —

1438. **Favre & Silbermann's Mercury-Calorimeter** — Müller-Pouillet II. 2. Fig. 194 5. 15. —

1439. **Dulong & Petit's Apparatus to determine the specific warmness** by means of the cooling theory — Müller-Pouillet II. 2. Fig. 196 . . . . . 2. 2. —

		£	Sh.	d.
1440.	**Weinhold's Apparatus for the calorimetric measuring of high temperatures.** — Müller-Pouillet II. 2. Fig. 197 and 193	3.	2.	—
1441.	**De la Roche & Berard's Apparatus to determine the specific warmness of gases submitted to a constant pressure.** — Müller-Pouillet II. 2. Fig. 199	9. —. or 16.	10.	—
1442.	**Clement & Desormes's Apparatus to determine the specific warmnes of gases, when their volume remains constant.** — Müller-Pouillet II. 2. Fig. 203	1.	10.	—
1443.	**Brix's Apparatus for determining the eraporating warmness of vapours.** — Müller-Pouillet II. 2. Fig. 206	1.	15.	—
1444.	**Berthelot's Apparatus for determining the whole warmness of steam.** — Müller-Pouillet II. 2. Fig. 210	2.	—.	—
1445.	**Favre & Silbermann's Calorimeter** for the assays about the heat of combustion — Müller-Pouillet II. 2. Fig. 211	8.	8.	—

D. Heat and Work.

1446.	**Apparatus for proving that temperature changes,** when gases expand or are compressed — Weinhold, Fig. 368	2.	5.	—
1447.	**Favre & Silbermann's Apparatus for showing, that rapidly compressed air grows warmer and that it cools, when it expands suddenly** — with a sensitive metal-thermometer	7.	7.	—
1448.	**Compression-tinder-box** with metal-sucker — Müller-Pouillet II. 2. Fig. 225 5/ or	—.	7.	6
1449.	— do., with a strong metal-sucker. — Müller-Pouillet II. 2. Fig. 227 11/ or	—.	17.	6
1450.	**Tyndall's Apparatus to make water er ether boil by rubbing** — Fitted for the centrifugal machine 5/ or	—.	6.	—
1451.	**Puhy's Apparatus for determining the mechanic equivalent of warmness** — Müller-Pouillet II. 2 Fig. 230 — with swinging engine Papin's Vapour-Piston see No. 1331	5.	5.	—
1452.	**Glass-Model for explaining Newcoman's Steam-Engine**	1.	17.	6
	Models of steam-engines parts of machines et cet. see No. 587 and following numbers.			
1453.	**Steam-Reaction-Whe el** of copper, with stand and spirit-lamp 17/ 1/3 or	1.	15.	—
1454.	**Heron's rotating ball,** entirely of glass. Frick, Fig. 867	—.	3.	6
1455.	**Eolipile** with safety-valve 10/ 14/ or	1.	—.	—
1456.	**Steam-ferry,** small glass-model of Schaeffer's pattern, moving upon water by escaping steam	1.	2.	6
1457.	**Fire-fountain,** Heron's ball of copper with stop-cock, to be filled with spirit — Frick, Pig. 908	—.	14.	—

£ Sh d.

Propogation of Heat.

1458. **Ingenhousz's Apparatus for showing the conduction of the heat in different rods.** — Müller-Pouillet II. 2. Fig. 264 . . . . . 7/ 12/ or 1. —. —

1459. — do., on stand. — Weinhold, Fig. 339 . . . . . 1 8. 6

1460. — do., smaller fitted for the sciopticon . . . . . 1. 1. —

1461. **Tyndall's Apparatus for showing that heat propagates unequally** in copper and iron. — Müller-Pouillet II. 2. Fig. 265 — with stand . . . . . 1. 1. —

1462. **Davy's Safety-Lamp.** — Müller-Pouillet II. 2. Fig. 268 . . . 10/ 14/ or 1. 3. —

1463. **Depretz's Apparatus for showing that temperature diminishes in proportion to the distance of the heating source.** — with 7 thermometers and a lamp — Müller-Pouillet II. 2. Fig. 270 . . . . . 3. 9. —

1464. — do., with 5 thermometers and a lamp . . . . . 3. 3. —

1465. — do., smaller, with 3 thermometers, for objective demonstration . . . 2. 2. —

1466. **Apparatus for essays about the conducting power of different liquids.** — Weinhold, Fig. 341 — with stand and thermometer . . . . . —. 13. 6

1467. **Mechanism for showing that liquids have little conducting power** — Müller-Pouillet II. 2. — with thermometer . . . . . 1/ or —. 13. 6

1468. **Grove's Apparatus for comparing the conducting power of two different gases.** — Müller-Pouillet II. 2. Fig. 577 — . . . . . 1. 3. —

1469. **Magnus's Apparatus for determining the conductibility of different gases.** — Müller-Pouillet II. 2. Fig. 278 . . . . . —. 17. 6

1470. **Gypsum-Plate** for showing the elliptic propagation of heat in crystals, with conducting wire — Weinhold, Fig. 340 . . . . . —. 1. 9

1471. **Concave Mirror for the essays about radiant heat,** mounted on stands with coal-and sponge holder

Diameter	11.	13.	15.	19. Inch
one pair, brass. made	3. —. —	3. 10. —	4. 17. —	6. 5. —
„ nickelled	3. 10. —	3. 18. —	5. 7. 6	6. 18. —
„ german-silver	3. 12. 6	4. 12. 6	5. 15. —	8. 2. —

1472. **Hat of platinum** net, to place on Bunsen's burner, for essays about radiant heat. — Weinhold, Fig. 331 . . . . . —. 1. 9

1473. **Thermoscop**, simple air-thermometer. — Weinhold, Fig. 332 . . . . . —. 2. 9

1474. **Melloni's Thermo-Multiplicator**, consisting of an else-wood-board, long $3^1/_2$ feet, with graduated rail and the following accessories!
6 stands with heavy foot, which may without difficulty be taken from the to be risen or lowered.
1 Locatelli's brass-lamp.
1 Copper- die.
1 alcool-lamp with platinum-spiral.
1 copper-wire.
1 table for Locatelli's lamp.
1 table.

£ Sh. d.

Melloni's Thermo-Multiplicator.

1 rock-salt-prism.
1 simple screen with square opening.
1 screen with adjusting slit and micrometer-screw.
1 double-screen with hinge.
1 screen with 5 adjusting apertures
1 stand with vertical mirror turning round its axle, with horizontal graduated circle and indicator, turning scale at the foot of the stand.
1 holder for the glass-plates.
1 thermo-pile with funnel and cylindric tube.
1 Bertram's Galvanometer.
1 double screen without hinge.

This apparatus in finest execution . . . . . 18. —. —

1475. — do., more simple . . . . . 14. —. —

The parts may also be obtained single at following prices.

1476. 1 Stand with heavy foot and column . . . . . 7/ or —. 8. 6
1477. 1 Locatelli's lamp with parabolic or spherical mirror . . . . . 11/ or —. 17. 6
1478. 1 Copper dice, 1 side polished, 1 side white, 1 side rough, 1 side black 6/ or —. 8. 6
1479. 1 Table for Locatelli's lamp . . . . . 3/ or —. 5. —
1480. 1 Alcool-Lamp with platinum-spiral . . . . . 3/ or —. 4. 6
1481. 1 bent copper wire . . . . . 2/6 or —. 3. 9
1482. 1 table to place several objects upon . . . . . 3/9 or —. 6. —
1483. 1 rock-salt-prism . . . . . 14/ or 1. 1. —
1484. 1 simple screen with square opening . . . . . 3/9 or —. 6. —
1485. 1 screen with adjusting slit and micrometer-screw . . . . . 8/6 or —. 12. —
1486. 1 double screen with hinge . . . . . 7/ or —. 9. —
1487. 1 stand with 5 adjusting apertures . . . . . 8/6 or —. 12. —
1488. 1 stand with turning scale at the foot, vertical mirror turning round its axle, graduated horizontal circle with index, turning scale at the foot of the stand . . . . . 38/ or 2. 10. 6
1489. 1 holder for glass-plates . . . . . 2/9 or —. 4. —
1490. 1 Thermo-pile with funnel and cylindric tube . . . . . 34/ or 2. 7. —
1491. 1 Bertram's Galvanometer . . . . . 34/6 3. 16. —
1492. 1 double screen without hinge . . . . . 5/ —. 7. —
1493. 1 steam-capsule, brass-made. — Weinhold, Fig. 333 . . . . . 3/3 or —. 5. 6
1494. 1 flat-vessel, filled with a solution of iodine and bi-sulphuret of carbon, on stand. — Weinhold, Fig. 334 . . . . . —. 6. —
1495. 1 brass-tube, closed on both sides by plates of rock-salt, serves for conducting gases . . . . . 7/ or —. 10. —
1496. Rock-salt-lenses, diameter 1—2 Inches . . . . . 16/ or 1. 9. —
1497. Rock-salt-plates, according to size and purity . . . . . 7 to —. 15. —
1498. Alum-plates, diameter 1—2 lines . . . . . 5 to —. 7. —
1499. Plates of citric acid . . . . . 3/9 to —. 6. —

		£	Sh.	d.
1500.	Plates of gypsum, ground and not ground . . . . . 3/ to	—.	5.	6
1501.	— „ calcareous spar . . . . . 3/ to	—.	8.	6
1502.	— „ mica . . . . . 3/ to	—.	5.	6
1503.	— „ agate . . . . . 3/6 to	—.	5.	6
1504.	— „ quartz . . . . . 8/6 to	—.	14.	—
1505.	— „ sal-ammoniac . . . . . 5/ to	—.	7.	—
1506.	— „ Iceland crystal . . . . . 5/6 to	—.	8.	6
1507.	— „ sugar . . . . . 4/ to	—.	5.	6
1508.	Coloured glasses with ground edges, 4 Inch square	—.	—.	8
1509.	Plate-glasses, not coloured, with ground edges 4 Inch square	—.	—.	8

Thermo-Electric Piles see chapter Thermo-Electricity.

1510.	Concave lens filled with a solution of jodine and bi-sulphuret of carbon, for showing that dark rays penetrate trough the solution. Weinhold, Fig. 335.	1.	15.	—
1511.	Tin-foil-screen with brass-frame, for the absorption of the caloric rays. Weinhold, Fig. 338	—.	6.	—
1512.	Croocker's Radiometer with wings blackened on one side. — Müller-Pouillet II. 2. Fig. 300	—.	9.	—
1513.	— do., with 2 superposed wheels, turning opposite to another	—.	11.	6
1514.	— do., with a fixed metal-disk and two not blackened mica-balls turning upon it	—.	17.	3
1515.	— do., with blackened wings and one metal-disk turning in opposite direction.	1.	1.	—
1516.	— do., with a platina-wire-ring, which can be heated by the galvanic current	1.	2.	6

VI. Magnetism.

1517.	**Load stone** natural . . . . . one pound	—.	10.	—
1518.	— do, caped and with anchor, prices varying to capacity of bearing (Figur No. 1518), ... from 18/ to	4.	6.	—

F10
No. 1518.

1519. **Load-Stones,** from best Wolfram-Steel

length about	4,	6,	8,	10,	12 Inch
price	1/3	1/9	2/3	3/6	5/3

£ Sh. d.

1520. **Two Load-Stones** with anchors and several rods of soft iron, with box

Length of the rods about Inch	4,	6,	8,	12,	16
price	7/—	10/6	12/3	1.1.—	1.9.—

1521. **Coulomb's Magnetic Store-House.** — Müller-Pouillet III, Fig. 19, long — 12 Inch, caped and with 3 sheets . . . . . 1. 1. —

1522. — do., with 6 sheets 2. 1. 6

1523. — do., with 9 sheets . . . . . 3. 2. —

1524. **Horse-Shoe-magnets.** Stone with anchor

Number of the sheets	Length of the sides 4	6	8	10	12
1	1/9	3/	4/9	8/6	14/
3	12/	17/6	1. 3. —	1. 9. —	1. 15. —
5	17/6	1. 9. —	1. 15. —	2. 4. —	2. 12. —
7	1. 6. 6	2. 2. 6	2. 7. —	2. 15 —	3. 10. —

Rods and Horse-Shoe-magnets will be supplied of best wolfram-steel in any wished size and form.

No. 1526.

1525. **Jamin's Foil-magnets:**

Number of foils.	Length of Sides 8 Inch	12 Inch
10	17/3	1. 9. —
15	1. 6. —	2. 1. —
20	1. 9. —	2. 12. —
25	2. 2. —	3. 5. —
30	2. 15. —	4. 6. —

1526. **Compass-Needles in form** of rhombs

long about	2.	4.	6.	8.	10 Inches
with brass-caps	1/6	2/6	3/	4/3	5/9
„ agate-caps	2/3	3/6	4/	5/9	7/6.

1527. **Brass-Stand for Compass-Needles** with steel-point. . . . . —. 3. —

1528. — do., of wood with steel-point . . . . . —. 1. 3

1529. — do., Lamont's with glass-swimmer . . . . . —. 12. 3

1530. **Iron-and Steel-Rods** for essays about magnetic distribution, 4 of soft iron & 4 of steel, long 10 lines, diameter $^1/_4$ Inch . . . . . —. 4. —

		£	Sh.	d.
1531.	**Rod of soft iron,** long $3^1/_4$ foot, to prove the terrestrial magnetism . .	—.	5.	3
1532.	**Apparatus for showing the distribution of magnetism in magnets** — consisting of 24 small magnets suspended on points	1.	7.	6
1533	— do., consisting of 18 small electro-magnets, turning single on points, with glass-plate and stand	2.	12.	—·
1534.	**Two Glass-Plates, upon which** small rod-and horse-shoe-magnets are cemented, for the demonstration of the magnetic curves	—.	12.	—
1535.	**Iron-Powder,** filings . . . . . one pound	—.	2.	6
1536.	— do., most finely divided	—.	4.	6
1537.	**Needle on stand to show declination,** with graduated circle	—.	14.	–
1538.	**Pocket-Compass-Needle** in form of a watch . . . . . 1/9 to	—.	7.	6
1539.	**Marine-Compass-Needle** with Cardanian Suspension . . . . from 17/6 to	2.	12.	—
1540.	**Declination-Box-Compass** with diopter and laying-down-needle	2.	12.	—
1541.	**A Pair of Astatic Needles** . . . . . from 3/6 to	—.	11.	6
1542.	— do., on stand . . . . . from 7/6 to	—.	17.	6
1543.	— do., larger, to be adjusted and with stand	1.	1.	—

1:10

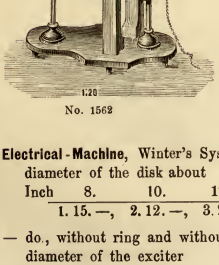
No. 1548.

1544.	**Inclination-Needle** with fork for suspending. — Müller-Pouillet III. Fig. 34	—.	6.	6
1545.	— do., on stand . . . . . 8/6 or	—.	12.	—
1546.	— do., with graduated circle	—.	17.	6
1547.	**Inclination and Declination-Needle,** to be used also as galvanoscope . . .	1.	3.	—
1548.	— do, with graduated circle (inclinatory and declinatory)	1.	12.	6
1549.	— do., with 2 graduated circle and adjusting micrometric screw. . . .	2.	2.	—
1550.	**August's Universal Compass-Needle,** for declination and inclination, with silvered graduated circle	2.	6.	—
1551.	— do, without graduated circle, quite simple	—.	17.	6
1552.	**Magnetic Inclinatory.** — Müller-Pouillet III. Fig. 35. . . . 5. 10 — or	7.	—.	—
1553.	**Leyser's Magnetometer** with mirror — Müller-Pouillet III. Fig. 44 5. 15 — or	9.	5.	—
1554.	**Lamont's Magnetic Theodolite** for the Journey. — Müller-Pouillet III. Fig. 46	10.	12.	—
1555.	**Coulomb's Turning Scale** for showing the principles of magnetic attraction and repulsion — with round glass-vessel and engraved scale 2. 12 — or	3.	9.	—
1556.	— do., with mirror . . . . . 3/9 or	4.	6.	—
1557.	**Weber's Apparatus for determining the full effect of magnets.** — Consisting of a scale long $1^1/_{10}$ yard, with sliding box-compass and load-stone — Müller-Pouillet III. Fig. 64	1.	12.	6

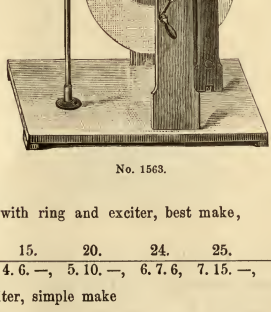
	£	Sh.	d.
1558. **Apparatus for determining the intensity of terrestrial magnetism** — with 1 small heavy load-stone. — Müller-Pouillet III. Fig. 66	4.	—.	—
1559. **Gauss's Bifilar-Magnetometer,** for determining how the intensity of terrestrial magnetism variates . . . . . 17. 10 — or	26.	—.	—
1560. — do., with stopper	26.	—.	—
1561. **Dove's Magnetic top** . . . . . 17/6 or	1.	3.	—

VII. Electricity.

Frictional-Electricity, Voltaic Electricity, Thermo-Electricity, Induction, Electro-Magnetism, Diamagnetism, Dynamic-Electricity.



No. 1562



No. 1563.

1562. **Electrical-Machine,** Winter's System, with ring and exciter, best make, diameter of the disk about

Inch	8.	10.	12.	15.	20.	24.	25.	27.
	1. 15. —,	2. 12. —,	3. 2. 6,	4. 6. —,	5. 10. —,	6. 7. 6,	7. 15. —,	10. 10. —

1563. — do., without ring and without exciter, simple make diameter of the exciter

Inch	8.	10.	12.	15.	20.	24.	25.	27.
	1. 9. —,	1. 17. —,	2. 4. —,	2. 15. —,	3. 15. —,	4. 17. 6,	6. 17. 6,	8. 15. —

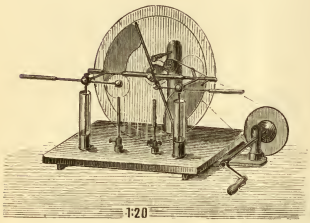
1564. — do., Ramsden's, with 2 conductors and 2 pairs of rubbing cushions, best make

diameter of the discs:	20.	24.	25.	27.	30.	Inches
price:	14. 10. —,	20. 5, —,	23. —. —,	26. —. —,	35. —. —	

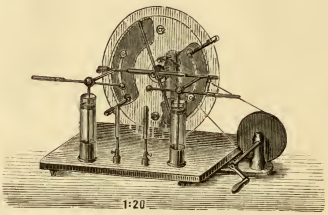
£ Sh. d.

1565. **Holtz's Electrical-Machine** (Influence Machine), with frame of polished elsewood, without India-Rubber-Stand for the sucking arms and without electrodes, simple make,
diameter of the turning discs: Inch 10. 12. 16. 18. 20.
price: 2. 2. —, 3. 3. —, 4. 12. —, 6. 15. —, 7. 5. —

1566. — do., best make, with India-Rubber-Stands for the sucking arms, with electrodes, frame of polished mahogany or walnut
diameter of the turning disc: Inch 10. 12. 16. 18. 20.
price: 3. 3. —, 4. 6. —, 5. 15. —, 8. —. — 10. 15. —



No. 1565.

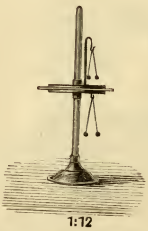


No. 1567.

1567. — do., Töpler's Self-exciting Machine, simple make
diameter of the turning disc: Inch 10. 12. 16. 18. 20.
price: 2. 6. —, 3. 9. —, 6. 6. —, 8. 12. —, 11. —. —

1568. — do., best make „ 4. 6. —, 7. —. —, 8. 15. —, 11. —. —, 13. —. —

No. 1572.



No. 1573.

1569. — do., Leyser's — Weinhold, Fig. 399 . . . . . 6. 12. —

1570. **Water-Influence-Electrical-Machine** — Weinhold, Fig. 390 . . . . . 1. 15. —

1571. **Armstrong's Steam-Electrical-Machine** length of the boiler 38 Inches, diameter 17 Inches . . . . . 28. 15. —

Accessories for Electrical-Machines:

1572. Apparatus for piercing ice . . . . . 6/3 or —. 11. 6

1573. — do., for the essays about bound electricity . . . . . 17/6 or 1. 1. —

1574. — do., to show the electric action of points — Frick, Fig. 607 5/9 or —. 8. 6

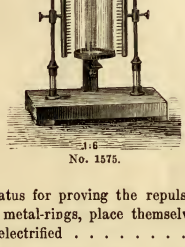
£ Sh. d.

Accessories for Electrical Machines

1575. — Grüel's apparatus to show the electric action of points (Electric Tourbillon) 1. 1. —

1576. — Apparatus for showing the difference of both electricities — Weinhold, Fig. 397 — . . . . . 1. 1. — or 1. 10. —

1577. — Apparatus for showing the attraction and repulsion of electric bodies — Weinhold, Fig. 374 . . . . . —. 14. —



1:6

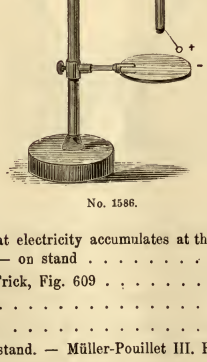
No. 1575.

1:8

No. 1578.

1578. — Apparatus for proving the repulsion of homonymous electricities. — The 3 metal-rings, place themselves in a rigth angle to another, when being electrified . . . . . —. 12. —

1579. — do., for proving the electric density. — A hollow brass body on isolated stand . . . . . —. 10. 6



No. 1586.

1580. — do., for proving, that electricity accumulates at the surface of bodies. — Frick, Fig. 612 — on stand . . . . . —. 12. —

1581. — do., Faraday's. — Frick, Fig. 609 . . . . . 7/ or —. 8. 6

1582. — do, Frick, Fig. 610. . . . . —. 10. 6

1583. — do., Frick, Fig 613 . . . . . —. 14. —

1584. Isolated brass-ball on stand. — Müller-Pouillet III. Fig. 126 . . . . . —. 10. 6

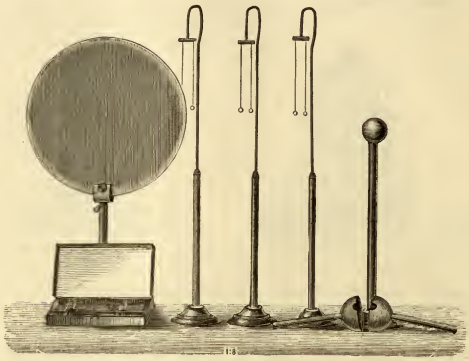
1585. Distributing Conductor. — Frick, Fig. 614. . . . . 7/ or —. 12. —

1586. Riess's Distributing Apparatus . . . . . 1. 1. — or 1. 9. —

£ Sh. d.

Distributing Apparatus.

1587. — do., Bertram's, consisting of a ball on isolated stand, with two hemispheres, which may be taken off, isolated handles, a hollow zinc-screen on stand, 2 pendulum stands and 1 case with 12 balls of sun-flower-pith suspended on silk and linen-threads, with pincette . . . 1. 15. —



1:8

No. 1587.

1588. — do., with Riess's distributing apparatus No. 1586 . . . . . 2. 15. —

1589. — do., Faraday's, consisting of 2 hemispheres, one of which contains another isolated brass-ball. — On stand . . . . . 1. 15. —

1:10

No. 1596.

1590. Franklin's India-Rubber-Plate on isolated stand, prices varying according to size . . . . . 7/ 12/ or —. 17. 6

1591. — do., with swinging figure . . . . . 1. 1. — or 1. 7. 6

1592. — do., dissectible, to show the theories of flasks . . . . . 1. 1. —

1593. Frick's Apparatus for proving the repulsion of hymonymous electricities —. 10. 6

1594. Discharger, simple without hinge . . . . . 1/9 3/ or —. 4. 3

1595. — do., with hinge. . . . . 4/9 or —. 7. —

1596. — do, with double handle and hinge . . . . . 5/9 or —. 9. 3

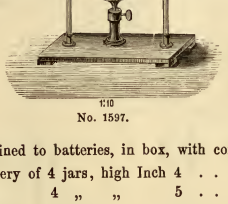
		£	Sh.	d.
	Discharger.			
1597.	— do., Henley's, universal on mahogany board. — Müller-Pouillet III. Fig. 153 18/6 or	1.	3.	—

1598. Leyden Jars, cylindrical, closed

high Inch	4,	5,	6,	7,	8,	10,	12
price	1/9	2/	3/3	4/6	5/9	6/6	8/

1599. — do., cylindrical, open, with India Rubber cover

high Inch	4,	5,	6,	7,	8,	10,	12
price	2/9	4/	4/9	5/3	7/	8/6	9/3



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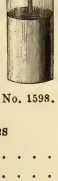
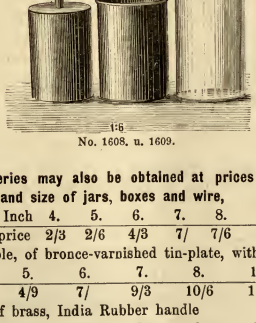
No. 1597.



No. 1598.

— combined to batteries, in box, with conducting wires

1600.	—	one battery of	4	jars,	high Inch	4	—.	12. —
1601.	—	„	4	„	„	5	—.	14. —
1602.	—	„	4	„	„	6	—.	18. 6
1603.	—	„	4	„	„	7	1.	9. —
1604.	—	„	4	„	„	8	1.	15. —
1605.	—	„	4	„	„	10	2.	4. —
1606.	—	„	4	„	„	12	2.	12. —



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No. 1608. u. 1609.

Larger batteries may also be obtained at prices proportionate to the number and size of jars, boxes and wire,

1607. Lightning Jars high Inch 4. 5. 6. 7. 8. 10. 12

price	2/3	2/6	4/3	7/	7/6	8/	9/9

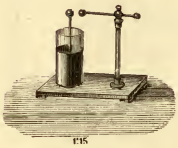
1608. Leyden Jar, dissectible, of bronce-varnished tin-plate, with glass handle

high Inch	4.	5.	6.	7.	8.	10.	12
price	3/3	4/9	7/	9/3	10/6	11/6	14/

1609. — do., dissectible, of brass, India Rubber handle

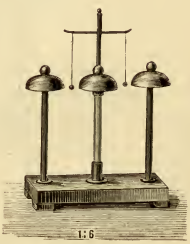
high Inch	4,	5,	6,	7,	8,	10,	12
price	3/9	5/3	8/	11/	12/3	14/	18/

		£	Sh.	d.
	Leyden Jar.			
1610.	— do., with chime of 2 bells . . . . . 11/6 or	—.	17.	6
1611.	— do., with automatical discharger . . . . . 11/6 or	—.	17.	6
1612.	Lané's Measuring Jar, on an mahogany board, the scale may be regulated with the hand	—.	14.	—
1613.	— do., with micrometric movement and divided scale . . 1.	9.	— or	2. 2. —
1614.	Lightening Tube long 3/ or Inch 4/9 20, 4/9 or 40 7/ according to diameter			
1615.	India-Rubber Lightening-Plate with handle	—.	5.	3
1616.	— do., on stand, prices varying to size from . . . . . 7/ to	1.	3.	—
1617.	Paper Tuft on isolated stand . . . . . 5/3 or	—.	7.	—
1618.	Glass Tuft with handle	—.	1.	3
1619.	— do., on stand	—.	3.	3



No. 1612.

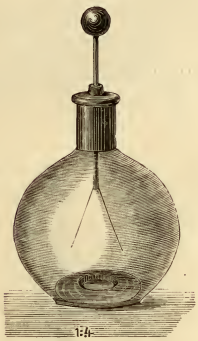
No. 1622.



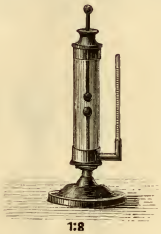
No. 1634.

1620.	Bullet-Rain, simple, with bullets	—.	3.	—
1621.	— do., on stand, with bullets . . . . . 5/3 or	—.	8.	6
1622.	Flying wheel with 4 beams on stand	—.	5.	3
1623.	— do., with 6 beams	—.	7.	—
1624.	Dancing Puppets, on stand . . . . . 9/3 or	—.	14.	—
1625	Electric Pistol . . . . . 4/ or	—.	5.	9
1626.	Lightening Tower or thunder-house . . . . . 10/6 or	—.	14.	—
1627.	Electric Pendulum, simple, on stand . . . . . 4/ or	—.	5.	9
1628.	India-Rubber-Rod . . . . . 3/ or	—.	4.	3
1629.	Glass-Rod . . . . . 1/ or	—.	1.	9
1630.	Mechanism for inflamming gun-powder . . . . . 3/ or	—.	4.	3
1631.	— do., „ „ ether. — Frick, Fig. 600	—.	5.	3
1632.	Electric Mortar — Frick, Fig. 639	—.	8.	6
1633.	Isolating Chair . . . . . 6/3 or	—.	8.	6
1634.	Carillon with 5, 5, 7 bells price 7/ 11/6 17/6			
1635.	Glass Tube, the half of which is coated with sealing-wax	—.	4.	3
1636.	Testing-Discs on isolated handle, each	—.	1.	—
1637.	Isolating Plate . . . . . 5/3 or	—.	10.	6

		£	Sh.	d.
1638.	Quadrant-Electrometer. — India Rubber Scale	—.	5.	9
1639.	— do., with etched glass-scale	—.	8.	6
1640.	Connecting Chain	—.	—.	9
1641.	Connecting Rods, supplied at the ends with hooks and bullets 1/9 to	—.	5.	3
1642.	Lightening Plate for Rosetti's Figures, of India Rubber, with stand and with disc of 12 Inch diameter — Carl's Repert. 1873 — . 1. 1 or	1.	9.	—
1643.	Thomson's Quadrant-Electrometer. — Müller-Pouillet III. Fig. 122 . . .	4.	6.	—
1644.	Apparatus for showing the magnetic effect of discharging. Müller-Pouillet III. Fig. 199	—.	5.	9
1645.	Bullets of Sun-Flower-pith . . . . . one dozen	—.	—.	9
1646.	— do, coloured or gilt . . . . . one dozen 1/0 or	—.	1.	3



No. 1647.



No. 1658.

1647.	Bennet's Electoscope, simple . . . . . 3/6 or	—.	6.	3
1648.	— do., in form of a bullet, with stand and aluminium pendulum . . .	—.	14.	—
1649.	— do., with condensator	1.	1.	—
1650.	— do., Beetz' Electroscope, with metal-casing and plate-glass-closing — Weinhold, Fig. 381	1.	8.	—
1651.	Electric Condensator with metal-plates (to be taken off). India Rubber Disc and pendulum	1.	9.	—
1652.	Mascard's Isolated Stand on Glass-Jar, partly filled with concentrated sulphuric acid	—.	14.	—
1653.	Exciter for positive and negative electricity in form of a small disc-electrifying machine	1.	1.	—
1654.	Dellmann's Electrometer. — Müller-Pouillet III. Fig. 119 . 1. 15. — or	2.	15.	—
1655.	— do., improved by Kohlrausch. — Müller-Pouillet III. Fig. 120 . . .	11.	10.	—
1656.	Carl's Tangent-Electrometer. — Carl's Repert. X. 69	3.	10.	—
1657.	Apparatus for showing, that electricity exists only on the surface . . .	—.	11.	6
1658.	Kinnersley's Thermometer	1.	3.	—
1659.	— do. entirely of glass. — Weinhold, Fig. 420	—.	7.	—
1660.	— do., Mascard's with fine platinum-spirals — Carl's Repert. XI. pag. 338	1.	3.	—

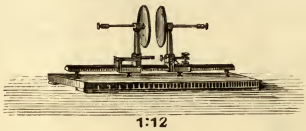
£ Sh. d.

1661. Kohlrausch's Sliding Condensator . . . . . 3. 10. — or 5. 15. —

1662. Conductor for surfaces with isolated handle by means of wich the hemispheres may be taken off . . . . . 1. 8. —

1663. Resin Electrophore with simple zinc-cover and glass-handle

diameter Inch	6,	8,	10,	13,	19
price	5/9	8/	11/6	14/	1. 1. —



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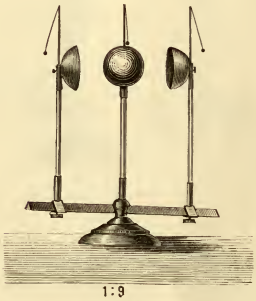
No. 1661.

1664. — do., with double zinc-cover and India-Rubber-handle

diameter Inch	6,	8,	9,	13,	19
price	6/6	9/3	14/	16/	1. 6. 6



1:9

No. 1662.

1:5

No. 1669.

1665. — of thick India-Rubber, not of cut plates, but each plate pressed to avoid the shrinking of plates. With double cover and India-Rubber-handle

diameter Inch	6,	8,	9,	13,	19
price	8/	12/	17/3	1. 6. 3.	1. 15. —

1666. Fox-tail . . . . . 1/6 to —. 3. —

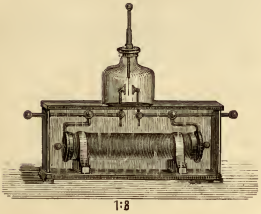
1667. — do., with handle . . . . . 2/ to —. 4. —

1668. Electric Egg . . . . . 1. 1. —

1669. — do. large, with stop-cock and ground brass-stand . . . . . 1. 15. —

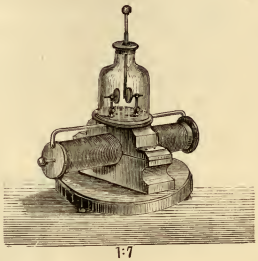
1670. Kienmayer's **Amalgam**, ... 1/4 pound —. 2. —

	£ Sh. d.
1671. **I Copper and I Zinc-Plate,** connected by copper-wire for the fundamental essay about galvanism	—. 1. 6
1672. **Volta's fundamental Essay,** consisting of an electroscope with 4 condensating plates varnished on 4 different sides	1. 9. —
1673. **Quadrant-Electrometer.** — Weinhold, Fig. 423 —.	7. —. —



1:8

No. 1675.



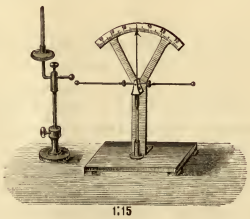
1:7

No. 1676.

1674. **Discharging Electrometsr.** — Weinhold, Fig. 430 —.	—. 17. 6
1675. **Fechner's Electrometer,** in glass-box, with a zambonic column. — The electrodes may be regulated by micrometric-screw	2. 15. —
1676. — do., without glass-box	2. 2. —

1:6

No. 1677.

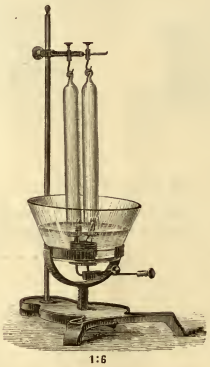


1:15

No. 1678.

1677. — do., with two zambonic columns, vertically standing . . . 1. 9. or	2. 2. —
1678. — do., Carl's	2. 9. —
1679. **Condensing-Plates,** consisting of a copper-and zinc-plate, with India-Rubber handles	—. 12. —
1680. **Buff's Apparatus for proving the electro-metoric power, which is produced when solid and liquid conductors are brought into contact.** — Müller-Pouillet III. Fig. 224	1. 3. —

		£	Sh.	d.
1681.	**Voltaic Pile.** — Müller-Pouillet III. Fig. 228 with 10, 20, 30, 40, 50 pairs of plates Sh. 12/6 1. — 1. 7. 6. 1. 15. — 2. 2. —			
1682.	**Voltameter.** — Müller-Pouillet III. Fig. 277	1.	3.	—
1683.	— do., for separated gases — on stand	—.	14.	3
1684.	— do., for producing large quantities of hydrogen and oxygen. — Müller-Pouillet III. Fig. 354	2.	6.	6
1685.	— do, Bunsen's, only for hydrogen and oxygen gas	—.	9.	6
1686.	— do., Hoffmann's. — Müller-Pouillet III. Fig. 353	1.	7.	6
1687.	— do., with glass-tube turning round its axle and adjusting pressure vessel — the gases may be led away combined or separately	2.	2.	—



1:6

No. 1696.

1688.	— do., with graduated tubes and separated pole-electrodes, for collecting the gazes mixed or separately 1. 9 or	2.	6.	—
1669.	— do., for the objective demonstration of electrolytical decompositions and crystallisations. — Müller-Pouillet III. Fig. 364 —	—.	14.	—
1690.	**Wiedemann's Apparatus for the Electrolysis** of solutions of salts. — Müller-Pouillet III. Fig. 368	2.	12.	—
1691.	**Apparatus for the electric endosmosis.** — A glass-tube bent in form of an U with porous wall. — Müller-Pouillet III. Fig. 370 —	—.	3.	—
1692.	**Apparatus for decomposing salts,** with platinum electrodes. — Frick, Fig. 728 3 or	—.	5.	3
1693.	**Wiedemann's Apparatus for the exact measuring of the fluid conduced to the negative pole** — With copper or platinum-cylinder 1. 8. — or	2.	12.	—
1694.	**Jacoby's Galvanoplastical Apparatus** 5/3 or	—.	7.	—
1695.	— do., consisting of a large vessel of glass or wood — (through-apparatus) 5/3, 8/6 or	—.	14.	—
1696.	**Bertram's Apparatus for decomposing water**	—.	14.	—
1697.	— do., with graduated tubes	1.	1.	—
1698.	— do., smaller and simpler	—.	7.	—

		£	Sh.	d.
1699.	**Horsford's Apparatus for determining the resistance of fluids** — Müller-Pouillet III. Fig 321	—.	10.	6
1700.	— do., Müller-Pouillet III. Fig. 322	1.	3.	—
1701.	— do. Becquerel's. Müller-Pouillet III. Fig. 320	—.	12.	—
1702.	— do., Müller-Pouillet III. Fig. 323	—.	12.	—
1703.	**Apparatus for examining volatile liquids.** — Müller-Pouillet III. Fig. 324	—.	17.	6
1704.	**Apparatus for proving that heat is produced by the galvanic current.** — Müller-Pouillet III. Fig. 343	1.	1.	—
1705.	**Apparatus for proving that heat is produced in metal wires.** — Müller-Pouillet III. Fig. 346	—.	14.	—
1706.	— do., on stand	—.	17.	6
1707.	**Daniel's Apparatus for the electrolysis ef solutions of salts** — Müller-Pouillet III. Fig. 358	2.	2.	—
1708.	**Daniel's Elements,** prices varying according to size . . 1/6, 2/6, 3/6 or	—.	7.	—
1709.	— do., transportable, high $4^1/_2$ Inch	—.	3.	6

1:9
No. 1704.

1710.	**Meydinger's Element,** high 6 Inch	—.	3.	6
1711.	— do., high 9 Inch	—.	5.	3
1712.	— do., simplest construction, high 6 Inch	—.	2.	6
1713.	— Pattern such as used in the German Empire	—.	2.	9
1714.	**Element of Siemens & Halske's,** high $6^1/_2$ Inch	—.	3.	6
1715.	— do., Minetto's, high 6 Inch	—.	3.	6
1716.	— do., Wollaston's, high 8 Inch	—.	8.	—
1717.	**Hare's Spiral,** active surface $1^2/_3$ □ yard. — Two parallel plates of copper and zinc are wound in form of spirals and isolated from another — This spiral is supplied with a handle and placed in a vessel, which is filled with thin sulhpuric acid (1: 10 or 12 volumina)	3.	3.	6
1718.	**Smee's Element,** consisting of a vessel and a silver-plated a plate placed between two zinc-plates, price varying according to size 5/9 12/ 17/9 or	2.	6.	—
1719.	**Grove's Platinum-Element** size of platinum-plate 6 × 3 Inch	2.	6.	—
1720.	do., „ „ 4 × $2^1/_2$ „	—.	16.	3
1721.	do., „ „ 1 × $1^1/_2$ „	—.	10.	6
1722.	**Bunsen's Elements,** with hollow coal-cylinders . . . 4/ 4/9 5/6 6/9 or	—.	8.	—
1723.	— do., with massive cylinders . . . . . 3/ 3/3 4/6 5/3 6/9 or	—.	7.	9

		£	Sh.	d.
1724.	**Chromic-Accid-flask-element** with 3 coal and 2 zinc-plates	1.	1.	—
1725.	— do., with 3 coals and 1 zinc-plate	—.	17.	3
1726.	— do., smaller	—.	14.	—
1727.	— do., smaller, with 1 coal- and 1 zinc-plate	—.	8.	6
1728.	**Dipping battery** of my own construction, without rack and pinion and without dented rods, by which frequently the frame is shaked, with 2 elements	2.	8.	—
1729.	— do., with 4 elements	2.	8.	—
1730.	— do., „ 6 „	3.	7.	—
1731.	— do., „ 8 „	4.	2.	6
1732.	— do., „ 10 „	4.	18.	—
1733.	— do., „ 12 „	5.	12.	6

No. 1733.

1:8

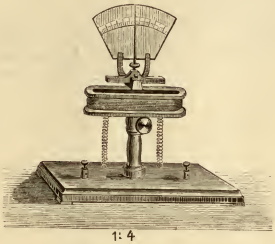
No. 1727.

1734.	**Leclanché-Elements,** according to size	3/3, 3/9, 5/6, or	—.	7. —
1735.	**Manganese-Element,** high 10 Inches		—.	5. 9
1736.	**Chloride of Silver Element.** $3^1/_2$ Inches high		—.	10. 6
1737.	**Planté's secondary element,** 6 Inches high		—.	16. —
1738.	— do., high 10 high.		1.	15. —

Clamps for Elements.

1739.	— for 2 wires, square or round		—.	—. 6
1740.	— for wire and plate		—.	—. 6
1741.	— for 2 wires		—.	—. 9
1742.	— for coal-plates	1/9 or	—.	2. —
1743.	— with wood-screws		—.	—. 9
1744.	— with metal-screws	from 0/9 to	—.	1. 9
1745.	**Metal-Galvanoskope** of metal in form of a box	11/6 or	—.	17. 6
1746.	— do., of wood		—.	11. 6
1747.	— do., with adjusting screws and stopper		1.	3. —
1748.	— do., with copper-band, on polished wood-board Müller-Pouillet III. Pig. 390		—.	10. 6

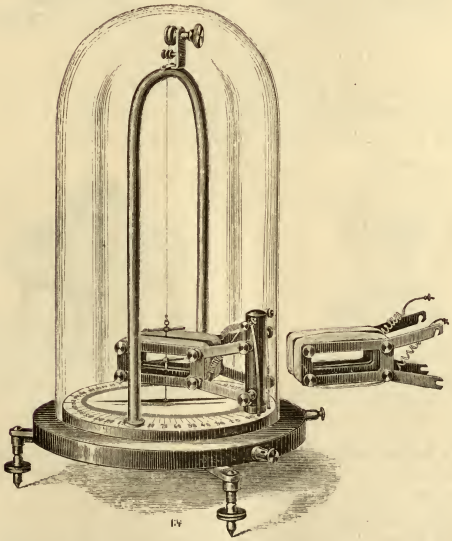
	£	Sh.	d.
1749. **Stöhrer's Vertical-Galvanoscope**. — Müller-Pouillet III. Fig. 391.	1.	8.	—
1750. — do., Stöhrer's — Müller-Pouillet III. Fig. 398 . . . . 2. 2. — or	3.	10.	—



1: 4
No. 1750.

1:8
No. 1751.

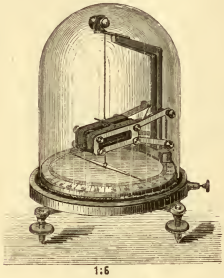
1751. — do., simple with a strong spiral and long index, for demonstration —. 14. —. or 1. 6. —



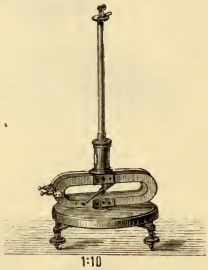
No. 1752.

1752. **Bertram's Galvanometer**, with divided opal-glass-scale . . . . . 3. 10. —
1753. — do., with brass-scale, silvered or nickelled, with micrometric screw, the frame throughout of metal. . . . . 7. 5. —

		£	Sh.	d.
	Bertram's Galvanometer			
1754.	— as 1752, but smaller, with scale on satinized paper	1.	11.	—
1755.	— as above, but with scale on opal-glass	1.	15.	—
1756.	**Schweigger's Multiplicator** with simple needle	1.	8.	—
1757.	— do., with a pair of astatic needles	2.	2.	—
1758.	— do., Nobili's with a pair of astatic needles, Müller-Pouillet III. Fig. 395. 2. 15. — or	3.	15.	—



1:6
No. 1754 u. 1755.



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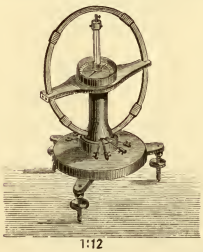
No. 1760.

1759.	— do., Wiedemann's. Müller-Pouillet III. Fig. 408 . . . 4. 5. — or	7.	—.	—
1760.	**Weber's Mirror-Galvanometer.** — Müller Pouillet III. Fig 406	8.	12.	6
1761.	**Toepler's Reflecting Galvanometer.** Weinhold, Fig. 438 & 439	7.	10.	—



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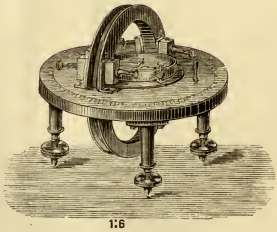
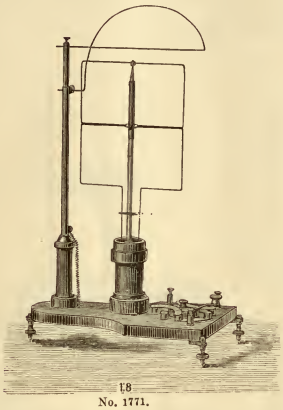
No. 1762.



1:6
No. 1768.

1762.	**Weber's Tangent-Box-Compass**, with simple copper-ring, and needle on a point, diameter 11 Inch. Simple. Müller-Pouillet III. Fig. 284 . .	1.	12.	—
1763.	— diameter 13 Inches, best make	3.	10.	—
1764.	— do., needles suspended on threads of cocoon	4.	5.	—
1765.	— with several wire-windings, needle suspended on threads of cocoon 3. 10. — or	4.	17.	6
1766.	— do., Gaugain's. — Müller-Pouillet III. Fig. 402 . . . . 5. 4. — or	8.	—.	—
1767.	**Sine-Box-Compass.** — Müller-Pouillet III. Fig. 403	7.	—.	—
1768.	— do., Siemens & Halske's. — Müller Pouillet III. Fig. 404 8. 12. 6 or	12.	—.	—

	£	Sh.	d.
1769. **Oersted's Fundamental Essay for showing how the galvanic current acts upon the compass-needle.** — Müller-Pouillet III. Fig. 387 —. 14. — or	—.	17.	6
1770. **Ampères Frame** with 3 figures and Solenoïde. Müller-Pouillet III. Fig. 479 1. 8. — or	2.	2.	—
1771. — do., new construction, with 4 figures, solenoïde and commutator. — Müller-Pouillet III. Fig. 484	2.	18.	—



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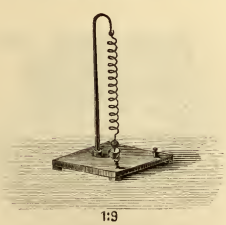
No. 1771.

1772. — do., as 1771, but with conductors of aluminium.	4.	6.	—
1773. **De la Rive's Apparatus for demonstrating how magnets are acting upon moveable currents.** — Müller-Pouillet III. Fig. 483 —	—.	5.	9
1774. — do., with solenoïde	—.	10.	6



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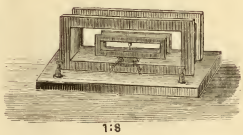
No. 1776.



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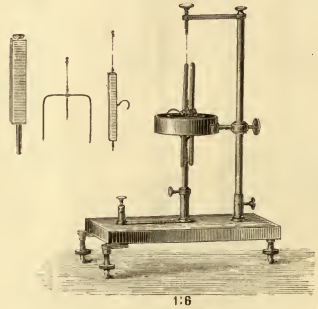
No. 1777.

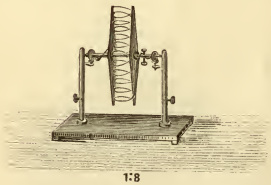
1775. **Buff's Apparatus for showing the attraction of parallel currents of same direction and the repulsion of parallel currents which have opposite direction.** — Müller-Pouillet III. Fig. 490. —	2.	2.	—
1776. **Roget's Spiral.** — Müller-Pouillet III. Fig. 492	—.	14.	—
1777. **Garthe's Apparatus for showing how crossed currents are acting upon another.** — Müller-Pouillet III. Fig. 496 . . . . . — 17. 6 or	1.	8.	—

		£	Sh.	d.
	Garthe's Apparatus for showing how crossed currents are acting upon another.			
1778.	— do., de la Rive's. — Müller-Pouillet III. Fig. 499 . . . —. 9. 3 or	—.	14.	—
1779.	**Apparatus for making a moveable magnet turn round a firm current.** — Müller-Pouillet III. Fig. 520	1.	3.	—
1780.	**Apparatus for making a magnet turn round its own axle.** — Müller-Pouillet III. Fig. 521	1.	3.	—
1781.	— do., Müller-Pouillet III. Fig. 522	1.	1.	—

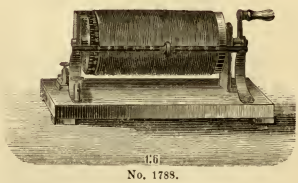


1:6
No. 1783.

1782.	**Apparatus for making a conductor** turn round a fixed magnet	1.	3.	—
1783.	**The apparatus 1779, 1780 & 1782 combined on one stand**	2.	15.	—
1784.	**Gore's rotating bullet** . . . . . —. 16. — or	2.	1.	—
1785.	**Barlow's rotating Wheel.** — Müller-Pouillet III. Fig. 517 . —. 17. 6 or	1.	3.	—



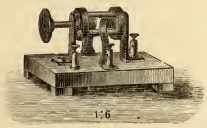
1:8
No. 1787.



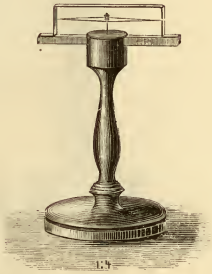
1:6
No. 1788.

1786.	**Apparatus for making one current turn under influence of an other.** — Müller-Pouillet III. Fig. 525 —	—.	17.	6
1787.	**Apparatus for showing the inclination of moveable currents.** — Frick, Fig. 819	1.	1.	—
1788.	**Wheatstone's Rheostate,** consisting of a roller of serpentine or alabaster, with strong wire, Müller-Pouillet Fig. 301	2.	12.	6
1789.	— do., with a double roller and fine wire — Müller-Pouillet III. Fig. 303	3.	2.	6
1790.	**Poggendorf's Rheocord.** — Müller-Pouillet III. Fig. 304	2.	15.	—

		£	Sh.	d.
1791.	**Eisenlohr's Resistance-Column,** with roller of serpentine-stone. — Müller-Pouillet III. Fig. 305 . . . . . 1. 3. — or	2.	2.	—
1792.	**Siemen's Stopper-Rheostate.** — Müller-Pouillet III. Fig. 306	2.	12.	—
1793.	**Siemen's Etalon of the Unity of resistance** – Müller-Pouillet III. Fig. 307	—.	19.	—
1794.	**Wheatstone's Bridge.** — Müller-Pouillet III. Fig. 317	1.	3.	—
1795.	— do, same modified by Siemens, — Müller-Pouillet III. Fig. 319 . .	2.	12.	—
1796.	**Stöhrer's Pachytrope.** — Müller-Pouillet III. Fig. 267	1.	3.	—
1797.	**Ruhmkorff's Gyrotrope.** — Müller-Pouillet III. Fig. 272	—.	12.	—
1798.	**Ruhmkorff's Commutator.** — Müller-Pouillet III. Fig. 273, according to size . . . . . —. 12. — 1. 1. — or	1.	9.	—
1799.	— do., same, in other form, open for schools	—.	17.	6
1800.	— do., Du Bois-Reymond's	—.	17.	6
1801.	— do., Hörmann's. — Weinhold, Fig. 436. . . . . —. 12. — or	—.	17.	6
1802.	— do., Müller-Pouillet III. Fig. 274. . . . . —. 14. — or	1.	1.	—



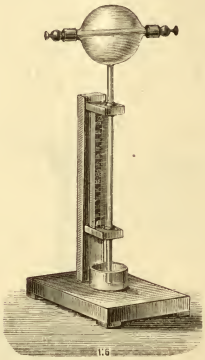
No 1799.



No. 1806.

1803.	— do., Pohl's. — Müller-Pouillet III. Fig. 275	—.	17.	6
1804.	— do., Reuschs. — Frick, Fig. 799.	—.	17.	6
1805.	— do., as used for Ampère's frame — Müller-Pouillet III. Fig. 484 . .	1.	1.	—
1806.	**Seebeck's Thermoelectric Element,** consisting of a rod of bismuth with copper-band and load-stone, on stand. — Müller-Pouillet III. Fig. 527 — —. 14. — or	—.	17.	6
1807.	— do., same but with a rod of antimony . . . . . —. 10. 6 or	1,	1.	—
1808.	**Thermoelectric rectangle,** consisting of bismuth and antimony. — Müller-Pouillet III. Fig. 528 . . . . . —. 16. — or	1.	1.	—
1809.	**Thermoelectric element,** consisting of a rod of bismuth and a copper-wire-band — Müller-Pouillet III. Fig. 529.	—.	8.	6
1810.	— do., open, consisting of a bismuth. rod and 2 soldered strips of copper — Müller-Pouillet III. Fig. 530.	—.	10.	6
1811.	— do., Müller-Pouillet III. Fig. 531.	1,	1.	—
1812.	— do., for determining the temperature of different bodies — Müller-Pouillet III. Fig. 533	1.	1.	—
1813.	— do., consisting of antimony and bismuth, with 2 fastening screws . .	—.	10.	6

		£	Sh	d.
1814.	**Becquerel's Thermoelectric Knot,** of platinum wire — Müller-Pouillet III. Fig 539, varying according to weight from. . . . . —. 5. 9 to	—.	14.	—
1815.	— do., Nobili's, of easily oxydating metals, as: zinc, iron &cet. — from —. 1. — to	—.	3.	—
1816.	**Peltier's Thermoelectric Cross.** — Müller-Pouillet III. Fig. 540 —. 17. 6 or	1.	3.	—
1817.	**Peltier's Apparatus for producing heat or cold by the electric current.** — Frick, Fig. 716 — . . . . . —. 17. 6 or	1.	3.	—
1818.	— do., Weinhold, Fig. 483.	2.	2.	—
1819.	— do., Magnus's. — Müller-Pouillet III. Fig. 541.	1.	9	—
1820.	— do., Magnus's. — Müller-Pouillet III. Fig. 542	—.	5.	3



No. 1817.

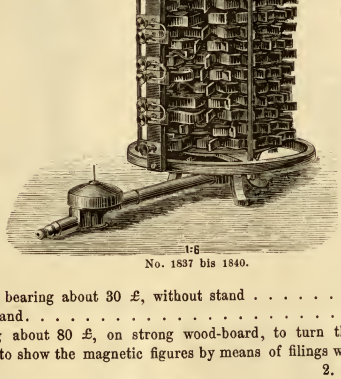
No. 1821.

1821.	**Nobili's Thermoelectric Column,** on stand, turning to all directions and to be risen or lowered. — Müller-Pouillet III. Fig. 543. — With 15 elements	1.	10.	—
1822.	— do., with 20 elements.	2.	2.	6
1823.	— do., „ 25 „	2.	10.	—
1824.	— do., „ 30 „	2.	17.	6
1825.	— do., „ 40 „	3.	15.	—
1826.	— do., „ 50 „	4.	5.	—
1827.	**Conical Receiver of brass,** for the precedent thermo-piles	—.	5.	6
1828.	— do., of german silver	—.	7.	6
1829.	**Cylindrical Receiver of brass**	—.	2.	9
1830.	do., of german silver	—.	3.	9
1831.	**Franz's Thermoelectric Pile.** — Müller-Pouillet II. 2 Fig. 388 2. 2. — or	2.	15.	—
1832.	— do, Markus's. Müller-Pouillet III. Fig. 245 with 16 elements . . .	2.	12.	—
1833.	— do., with 20 elements	3.	15.	—
1834.	— do., „ 40 „	7.	5.	—
1835.	— do. „ 60 „	10.	10.	—

£ Sh. d.

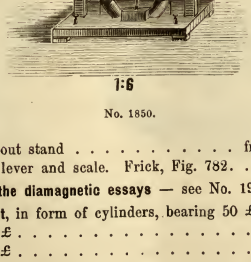
Franz's Thermoelectric Pile.

1836. — do., Noë's. Müller-Pouillet III. Fig. 548 . . 1. 15. — 2. 6. — or 3. 10. —
1837. — do., Clamond's fitted for coal-gas, with regulating gauge; especially recommended for chemical and galvanoplastical labours — with 60 elements 5. 15. —
1838. — do., with 120 elements . . . . . 9. 15. —
1839. — do., „ 150 „ . . . . . 11. 5. —
1840. — do., „ 270 „ . . . . . 19. —. —



No. 1837 bis 1840.

1841. **Electro-Magnet**, bearing about 30 £, without stand . . . . . —. 14. —
1842. — do., with stand. . . . . 1. 1. —
1843. — do., bearing about 80 £, on strong wood-board, to turn the poles above, and to show the magnetic figures by means of filings with scale 2. 2. — or 2. 15. —



No. 1850.

1844. — do., smaller, without stand . . . . . from —. 3. 6 to —. 11. 6
1845. — do., larger, with lever and scale. Frick, Fig. 782. . . 4. 6. — or 7. —. —

Electro-Magnets for the diamagnetic essays — see No. 1930 to 1932 —

1846. **Joule's Electro-Magnet**, in form of cylinders, bearing 50 £. . . . . 1. 1. —
1847. — do., bearing 100 £ . . . . . 2. 2. —
1848. — do., bearing 200 £ . . . . . 3. 10. —
1849. **Magnetizing Spiral** . . . . . —. 12. — or 1 3. —
1850. **Ritchie's Electromagnetic top.** — Müller-Pouillet III. Fig. 448 . . . . . 1. 15. —

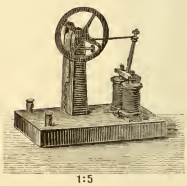
£ Sh. d.

Ritchie's Electromagnetic top

1851. — Ritchie's small, with mercury-interruptor . . . . . —. 10. 6

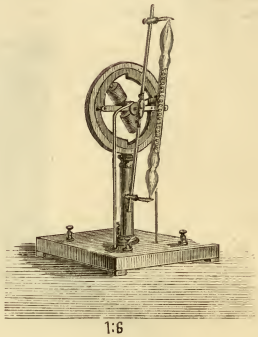
1852. **Grüel's Electro-Magnetic Swinging-wheel** . . . . . —. 11. 6

1853. — do., large . . . . . 2. 12. — or 3. 10. —



1:5

No. 1852.



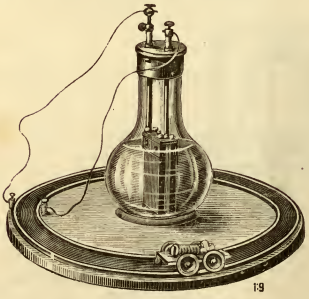
1:6

No. 1854.

1854. **Electromotor** or turning Geissler's tubes, coloured discs etc. 1. 15. — or 2. 6. —

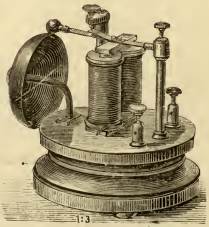
1855. **Electric Railway** of simplest kind, element excl. . . . . 1. 6. —

1856. — do, with a bottle-element . . . . . 2. —. —



1:9

No. 1855.



1:3

No. 1859.

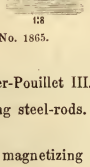
1857. **Wagner's Electromagnetic Hammer.** — Müller-Pouillet III. Fig. 564 —. 17. 6 or 1. 9. —

1858. — do., connected with a clock and receiver, to be used also as acoustic apparatus for the air-pump . . . . . 1. 9. —

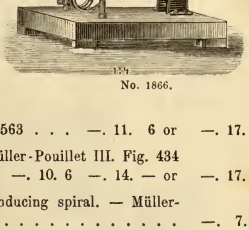
1859. — do., same without receiver . . . . . 1. 3. —

		£	Sh.	d.
1860.	**Schumann's Electromagnetical Inclinatory,** for the following experiments: 1. attraction of iron by a magnet. 2. Poles of the same name repel and those of different names attract each other. 3. **the phenomenon of the inclination.** 4. **the magnetic excitement of soft iron through the terrestrial globe.** With full instruction for use	1.	15.	—
1861.	**Electromagnetical rotating apparatus.** — Frick, Fig. 788 .	—.	10.	6 or —. 17. 6
1862.	**Page's Electromotor,** with two vertical spirals, in form of a steam-engine. — Müller-Pouillet III. Fig. 458 & 459	8.	12.	6 or 11. 10. —
1863.	— do., as water-pump	1.	3.	— or 1. 12. —
1864.	— do., as stroboscopic cylinder	1.	3.	— or 1. 12. —
1865.	**Telephone** with 27 yards conducting wire, each pair . .	—.	15.	— or 1. —. —

No. 1860.



No. 1865.



No. 1866.

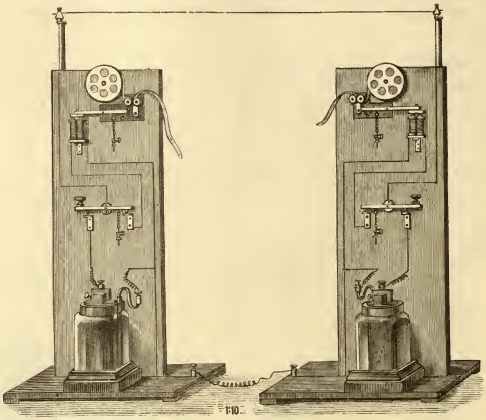
1866.	**Interrupting wheel.** — Müller-Pouillet III. Fig. 563 . . .	—.	11.	6 or —. 17. 6
1867.	**Spiral-Band** for magnetizing steel-rods. — Müller-Pouillet III. Fig. 434	—.	10.	6 —. 14. — or —. 17. 6
1868.	**Oberbeck's Iron Ring** with magnetizing and inducing spiral. — Müller-Pouillet III. Fig. 437	—.	7.	6
1869.	**Waltenhofen's Apparatus for showing the action of a spiral on magnets and soft iron,** Müller-Pouillet III. Fig. 439	1.	1.	—
1870.	**Wertheim's Apparatus for producing galvanic tunes.** — Müller-Pouillet III. Fig. 445 —	2.	2.	—
1871.	**Stöhrer's Electromagnetic Motor.** — Müller-Pouillet III. Fig. 455	8.	12.	6
1872.	**Index-Telegraph,** small pattern with key	1.	9.	—
1873.	— same as precedent, but with 2 stations	2.	15.	—
1874.	— larger pattern with key	3.	4.	—
1875.	**Morse-Telegraph,** small with clock-work and key, one station	2.	15.	—
1876.	— do., two stations	5.	5.	—
1877.	— do., without clock-work, with winch and weights	1.	17.	—

£ Sh. d.

Morse-Telegraph

1878. — do., constructed in my own works, new pattern exceedingly adapted for the instruction, 2 stations, complete with clock-work and elements 5. 15. —

1879. — do., without clock-work, with winch, 2 stations . . . . . 4. 5. —

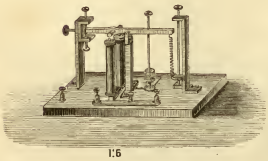


No. 1878. u. 1879.

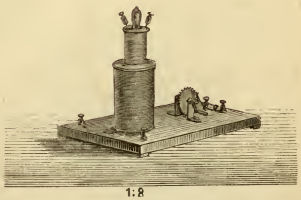
1880. — do., large, under glass-box. — With galvanoscope, feeler, relais &c. — Müller-Pouillet III. Fig. 462 . . . . . 7. 15. —

1881. **Plettner's Relais** . . . . . 2. 15. —

1882. **Electric Clock**, for schools, Demonstration Apparatus . . . 2. 12. — or 4. 5. —



No. 1881.



No. 1883.

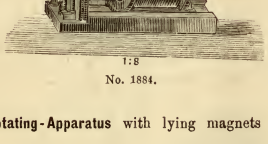
1883. **Inductions-Cylinders**, one of which moveable, with steel-magnet, interruptor and handles. — Müller-Pouillet III. Fig. 562 and 575 —. . . . . 2. 2. —

1884. **Du Bois-Reymond's Sliding Apparatus**, for physiological purposes. — Müller-Pouillet III. Fig. 566. — . . . . . 1. 1. — or 1. 9. —

1885. **Riess's Inductions-Spiral**, horizontal. — Müller Pouillet III. Fig. 567. — 1. 9. —

1886. — do, vertical, with sledge and scale divided into millimeters. . . . . 2. 2. —

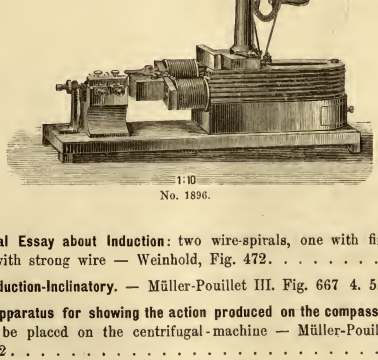
		£	Sh.	d.
1887	**Buff's Disjunctor.** — Müller-Pouillet III Fig. 579	1.	9.	—
1888.	**Induction-Apparatus**, small, on board	—.	8.	6
1889.	— do., larger, on mahogany-box . . . . . —. 14. — or	1.	9.	—
1890.	— do., du Bois-Reymond's. . . . . 2. 2. — or	2.	12.	—
1891.	— do., Beyerlacher's	2.	—.	—
1892.	— do., Gaiffe's	1.	9.	—
1893.	— do., Spamer's	3.	3.	—



1:8

No. 1884.

1894.	**Magneto-Electric Rotating-Apparatus** with lying magnets and handles, in box. . . . . 1. 9. — or	2.	2.	—
1895.	— do., with 2 magnets	2.	12.	—
1896.	**Stöhrer's Magneto-Electric Induction-Machine** — Müller-Pouillet III. Fig. 612	10.	8.	—

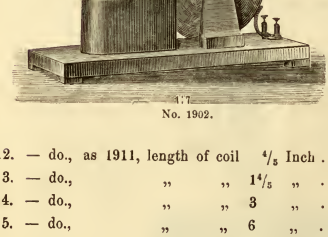


1:10

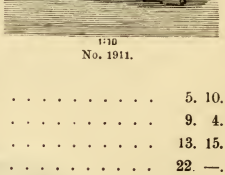
No. 1896.

1897.	**Fundamental Essay about Induction**: two wire-spirals, one with fine, the other with strong wire — Weinhold, Fig. 472.	1.	9.	—
1898.	**Weber's Induction-Inclinatory.** — Müller-Pouillet III. Fig. 667 4. 5. — or	5.	15.	—
1899.	**Arrago's Apparatus for showing the action produced on the compass-needle.** — To be placed on the centrifugal-machine — Müller-Pouillet III. Fig. 662	1.	3.	—
1900.	**Apparatus for showing the induction produced on electric currents by terrestrial magnetism** — Müller-Pouillet III. Fig. 666 . . 4. 17. 6 or	5.	17.	6
1901.	**Pückler & Fessel's Apparatus, for proving the reaction of currents induced by movement** — Müller-Pouillet III. Fig. 663	3.	2.	—

		£ Sh. d.
	Plücker & Fessel's Apparatus, for proving the reaction of currents induced by movement	
1902.	— do., Faraday's. — Müller-Pouillet III. Fig. 658	2. 6. —
1903.	**Microphone**. — Müller-Pouillet III. Fig. 653—655 . . . . . —. 5. 6 or	—. 7. —
1904.	**De la Rieve's Apparatus for showing how the magnet acts upon electric discharging in thin gases.** — Müller-Pouillet III. Fig. 603 —	2. 12. —
1905.	— do., more simple, without electro-magnet — Müller-Pouillet III. Fig. 604 —	1. 1. —
1906.	**Ruhmkorff's Spark-Inductor,** with 800 windings	—. 10. 6
1907.	„ „ 1000 „	—. 14. —
1908.	„ „ 2000 „	—. 19. —
1909.	„ „ 3000 „	2. 6. —
1910.	„ „ with platinum-interruptor and pole-screws which may be taken off, lengh of the coil $^1/_2$ Inch	2. 6. —
1911.	— do., same but with current-changer	2. 15. —



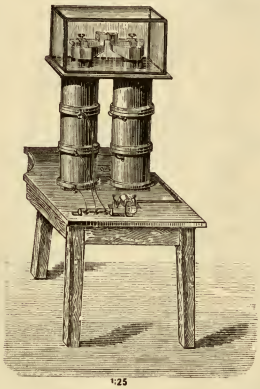
No. 1902.



No. 1911.

1912.	— do., as 1911, length of coil $^4/_5$ Inch	5. 10. —
1913.	— do., „ „ $1^4/_5$ „	9. 4. —
1914.	— do., „ „ 3 „	13. 15. —
1915.	— do., „ „ 6 „	22. —. —
1916.	— do., „ „ 10 „	31. 5. —
1917.	**Geissler's Tube with uranium-glass** in different colours, 4 Inch long . . .	—. 1. 9
1918.	— do., 6 Inch long	—. 3. —
1919.	— do., 8 Inch „	—. 3. 9
1920.	— do., fluorescing, 6 Inches long	—. 4. 6
1921.	— do., „ 8 „ „	—. 5. 3
	Larger Tubes on demand at moderate prieces.	
1922.	**Spectral-tube, filled** with gases or vapours . . . . . —. 5. 3 or	—. 10. 6
1923.	**Mitscherlich's Eight Spectral Tubes**	—. 19. —
1924.	**Phosphorescing Tube** . . . . . —. 5. 6 or	—. 7. —
1925.	**Fluorescing tubes** showing different fluorescences in different form and execution . . . . . from —. 4. 6 to	3. 3. —
1926.	— do., lighting at night . . . . . from —. 12. —	2. 2. —
1927.	**Houzeau's Ozon-Tubes** . . . . . each	1. 1. —
1928.	**Spectrum of 7 phophorescing tubes in form of a Stereoscope**	—. 16. —
1929.	**Fluoroscope**	—. 10. 6

		£	Sh.	d.
1930.	**Large Electro-Magnet for diamagnetical essays.** — Height of the iron-nucleus about 16 Inches, thickness 2 – 2½ Inch. With 6 graduated spirals to be connected with eachother. With commutator & 2 perforated half-anchors, the cylindrical iron-sets of which have a different form at each end; on these half-anchors are placed two angles on which several objects may be attached; glass-box with mechanism for rising and lowering the cocoon-thread	28	15.	—
1931.	— do., same but with only 2 spirals	24.	10.	—
1932.	— do., height of the iron-nucleus 10½ Inch, thickness 20 Inch. — With only 2 spirals, without glass-box, with simple stand	16.	15.	—



No. 1930.

Secondary Apparatus for diamagnetic essays.

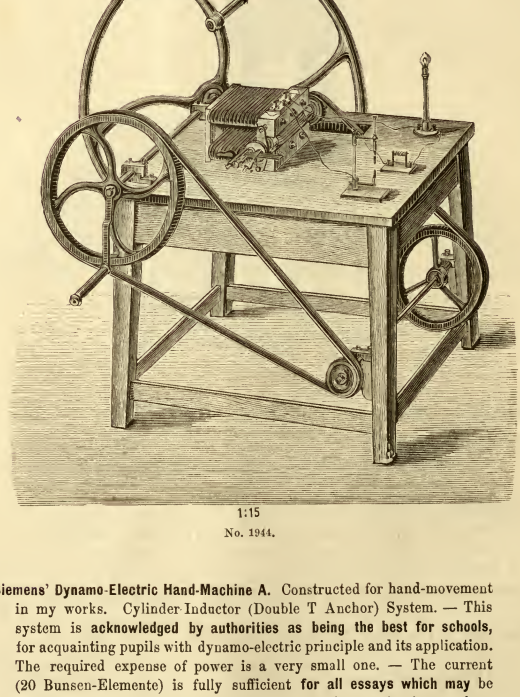
1933.	**Small massive copper-disc**	—.	2.	3
1934.	„ „ **bismuth-disc**	—.	4.	3
1935.	„ „ **bismuth-bullet**	—.	3.	9
1936.	**Faraday-Glass** with stand to place the glass upon	1.	3.	—
1937.	**Large Stand with copper-disc** of 13 Inch diameter, with axle and winch, for showing, that it is not possible to turn the copper-disc, when it is placed between both poles	1.	7.	6
1938.	**Rotating-Mechanism** with tube, for melting easily fusible metals between both poles	1.	1.	—
1939.	**Tube, which can be put in both half-anchors** — With 2 Nicol's prisms, divided disc and index	2.	17.	6
1940.	**Rods of different metals** from —. 1. — to	—.	2.	6

£ Sh. d

1941. **Tyndalls' Apparatus for showing, that a magnetic polarity is produced in a diamagnetic body under influence of a magnetizing power and that this polarity is opposite to that, which an iron rod would assume under similar circumstances.** — Müller-Pouillet III. Fig. 684 . . . . . 15. 15. —

1942. **Ruhmkorff's Apparatus for proving that the polarizing plane is turned by magnetizing powers.** — Müller-Pouillet III. Fig. 693 . . . . . 31. 10. —

1943. — do., Böttcher's. — Müller-Pouillet III. Fig. 695 . . . . . 5. 10. —



1:15

No. 1944.

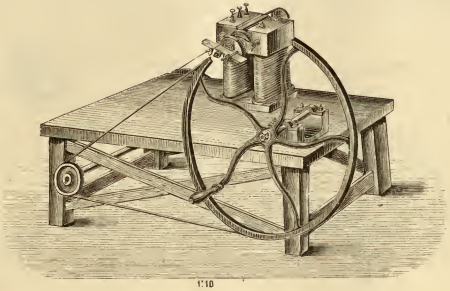
1944. **Siemens' Dynamo-Electric Hand-Machine A.** Constructed for hand-movement in my works. Cylinder Inductor (Double T Anchor) System. — This system is **acknowledged by authorities as being the best for schools,** for acquainting pupils with dynamo-electric principle and its application. The required expense of power is a very small one. — The current (20 Bunsen-Elemente) is fully sufficient **for all essays which may** be made in **schools.** — The machine can be put into action by any boy. — Full particulars on application.

Complete, with strong wooden table, swinging-weels &c. but without the supplementary apparatus. — With special instruction for use. . 22. —. —

£ Sh. d.

Siemens' Dynamo-Electric-Hand-Machine

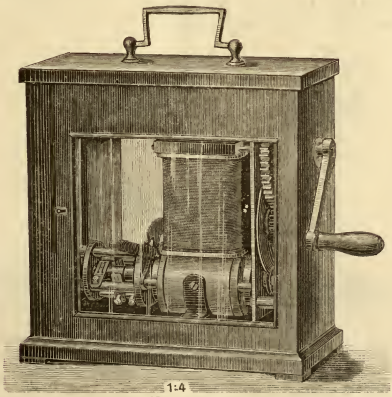
1945 — **B.** same machine, smaller, mounted on a oak-wood block. — Force of current = 4 Bunsen Elements. — Special instruction on demand 8. 12. 6



1:10
No. 1945.

1946. — **C.** same, for physiological effects . . . . . 5. 10. —

The excellent action of my dynamo-electric Machine is fully warranted; for testimonials received see the first side of this Catalogue.



1:4
No. 1946.

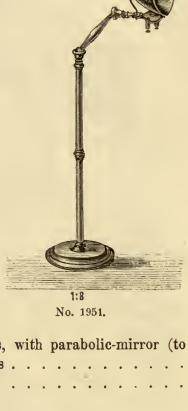
Any other constructions of dynamo-electric Machines will also be supplied on demand-although for school-purposes only Siemens' Cylinder-Inductor- (Double T. anchor) System can be recommended.

£ Sh. d.

Supplementary Apparatus for the dynamoelectric Machines A. & B.

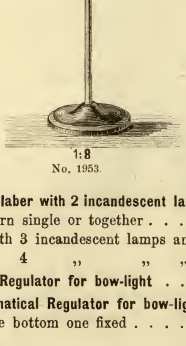
1947. **Wood-Model of the double T. anchor,** for the machine A. . . . . —. 3. —
1948. — do., same for machine B. . . . . —. 1. 9
1949. **Vacuum-Incandescent-Lamp on wood-stand,** with fastening screws . . . . —. 12. —
1950. — more elegant, on large stand . . . . . —. 17. 6

1:6
No. 1950.

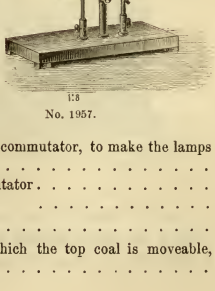


1:8
No. 1951.

1951. — on brass-stand, moveable in bullet-hinges, with parabolic-mirror (to be taken off) and bullet-clock of opal-glass . . . . . 2. 12. —
1952. — do., Bernstein's, with a hollow-coal-band . . . . . —. 17. 6



1:8
No. 1953.



1:8
No. 1957.

1953. **Candelaber with 2 incandescent lamps** and commutator, to make the lamps burn single or together . . . . . 1. 9. —
1954. — with 3 incandescent lamps and commutator . . . . . 2. —. —
1955. — „ 4 „ „ „ „ . . . . . 2. 12. —
1956. **Hand-Regulator for bow-light** . . . . . —. 14. —
1957. **Automatical Regulator for bow-light,** on which the top coal is moveable, the bottom one fixed 2. 17. 6

£ Sh. d.

Automatical Regulator for Bow-Light.

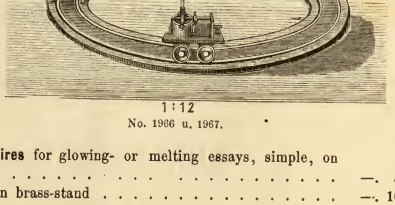
1958. — do., regulating both carbons in such manner, that the light remains of equal intensity . . . . . 5. 5. —

1959. **Carbons** for No. 1957 and 1958. . . . . a pair —. 1. 3

1960. **Magic Lantern,** fitted with a bow-light lamp No. 1958 . . . . . 11. —. —
(**Other Lanterns** see No. 1226, 1227, 1228).

Any Sciopticons will be fitted with bow- or incandescent light at cheapest prices.

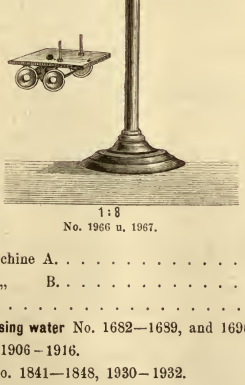
1:5
No. 1962.



1:12
No. 1966 u. 1967.

1961. **Stand for fixing thin wires** for glowing- or melting essays, simple, on wood-stand . . . . . —. 5. 9

1962. — do., more elegant, on brass-stand . . . . . —. 10. 6



1:8
No. 1966 u. 1967.

1963. **Platinum-Spiral** for Machine A. . . . . —. 2. 9

1964. — do., „ „ B. . . . . —. 1. 6

1965. **Iron-Wire** . . . . . each cylinder —. —. 6

Apparatus for decomposing water No. 1682—1689, and 1696—1698.

Coil-Inductors see No. 1906–1916.

Electro-Magnets see No. 1841—1848, 1930–1932.

Electro-Magnetic-Motors, see No. 1850—1864.

Apparatus for transversal swingings see No. 809 and 810.

1966. **Electric Railway** with rails. The machine of this electric railway is of the same construction as my dynamo-electric machines. By loosening

		£ Sh. d.
	of three screws it may be taken from the waggon and fastened at a stand (this will be added to each apparatus). It may then serve as motor for turning Geissler's Tubes, Coloured discs &-cet.	4. 5. —
	Electric Railway.	
1967.	— do., same as 1965, but without the mentioned stand	4. 6. 6
1968.	**Mechanism for placing Geissler's Tubes** &-cet. on the stand	—. 8. 9
1969.	**Electric Railway,** same as 1966, but smaller and fixed on the waggon .	1. 15. —
1970.	**Apparatus for registering the number of rotations**	—. 7. 6
1971.	— do., automatical, registering up 1000	—. 15. 6
1972.	**Jablochkoff's Candles**	—. 1. 9

Other apparatus which can be used with the dynamo-electric hand-machine are mentioned at the respective chapters.

VIII. Meteorology.

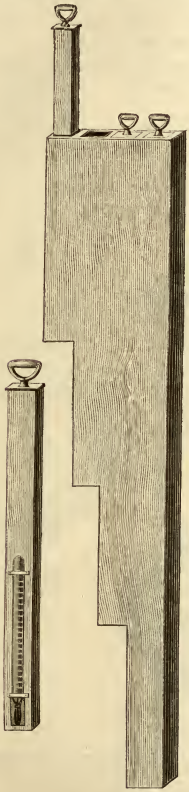
1973.	**Pouillet's Pyrheliometer.** — Müller-Pouillet II. 2 Fig. 301	4. 6. 6
1974.	**Standard Thermometer,** divided into $^1/_{10}{}^0$ degrees, 0—102 °, patented from 2. 12. — to	3. 10. —
1975.	— do., each degree divided into $^1/_5{}^0$ — from 30 up to 50. — patented from —. 17. 6 to	1. 15. —
1976.	— do., in brass frame, mounted for being attached to the window, scale divided into $^1/_5{}^0$	1. 8. —
1977.	**Maximum- and Minimum-Thermometer** with milk-glass-scale and brass-arm	1. 8. —
1978.	**Minimum-Thermometer,** Negretti' & Zambra's Pattern, $^1/_2{}^0$, with patented fastening mechanism . . . . . from —. 14. — to	—. 17. 6
1979.	**Minimum-Thermometer,** the tube filled with amyl-alcohol, each degree divided into $^1/_2{}^0$ . . . . . from —. 10. 6 to	—. 17. 6
1980.	**Maximum- and Minimum-Thermometer,** small, for travellers, with box . .	1. 3. —
1981.	**Pocket-Thermometer** in brass-box . . . . . from —. 4. 6 to	—. 7. —
1982.	**Thermometer for measuring the temperature** of earth, for great depths, each degree divided into tenths	—. 14. —
1983.	— do., same for less profound depths, each degree divided into fifths .	—. 11. 6
1984.	— do., for the surface of earth, each degree divided into fifths	—. 11. 6
1985.	**Lamont's Box,** for 4 earth-thermometers	2. 2. —
1986.	**Thermometer-Case,** which may be approached to the window of the observing room and automatically opens	3. 16. —
1987.	— do., more simple	3. 2. —
1988.	**Thermometer for wells**	—. 8. 9
1989.	**Hypsometer,** with boiling vessel, steam-casing, and thermometer, each degree divided into $^1/_{10}{}^0$, with box . . . . . 2. 17. 6 to	3. 15. —

£ Sh. d.

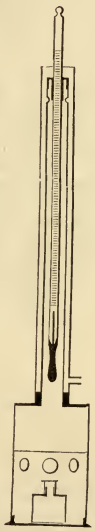
Hypsometer.

1990. — do., large, with a thermometer divided into $^1/_{50}{}^0$ . . . . . 6. 18. —

1991. **Apparatus for testing and comparing** thermometers, with rotating stirrer and mechanism for maintaining a constant temperature from 2. 17. 6 to 6. 18. —



No. 1985.



No. 1990.

1992. **Standard-Barometer**, (Vessel-Siphon-Barometer), System Wild-Fuess. — Adjusting is made by microscopes. The coïncidence of axles of the microscopes and of the zeros of the nonius may be determined at the instrument.

The nonius shows 0,05 and can be supplied at special demand also on 0,02 Mm., with a tube of $^3/_5$ Inch diameter . . . . . 18. 15. —

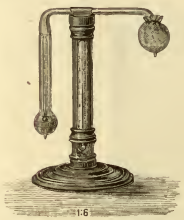
£ Sh. d.

Standard-Barometer.

1993. — do., like 1991, but without microscopes. System Wild-Fuess. — Adjusting is made by a visor, the nonius may be read up to 0,05 Mm. Report on the scientific Instruments on the Berlin Industrial-Exhibition 1880, page 222 . . . . . 15. 15. —

1994. — do., System Wild-Fuess. — With a tube of 8 Mm. diameter, without adjusting screw at the nonius, the nonius shows 0,10 Mm. . . . . 10. 18. —

1995. **Siphon-Barometer** with glass-stop-cock, for chemical laboratories, divided glass-tube. With glass-nonius indicating 0,10 Mm. 8. 12. 6



No. 2005.

1996. — a wide glass-tube with scale divided into millimeters on a board . . 3. 9. —

1997. **Fortin's Travellers Barometer** for measuring heights. The nonius indicates up to 0,10 millimeter. With stand in case . . . . . 13. 16. —

1998. — do., more simple, without stand and without box . . . . . 7. 4. —

1999. **Vessel-Barometer** with reduced scale. The nonius indicates up to 0,10 millimeter — this instrument is employed by the stations of the German Maritimal Observatory . . . . . 8. 12. —

2000. — do., same as 1998, but simpler . . . . . 6. 12. —

No. 2008.

2001. **Barometer for Ships,** introduced by the English, German and Russian Marine . . . . . 7. 10. —

2002. **Metal-Barometer** (Aneroid-Barometer) different patterns from 1. 8. — to 3. 5. —

2003. **Regnault's Hygrometer,** with simple aspirator. . . . . 5. 3. 6 or 7. 10. —

2004. — do., with double aspirator. . . . . 5. 15. — or 8. —. —

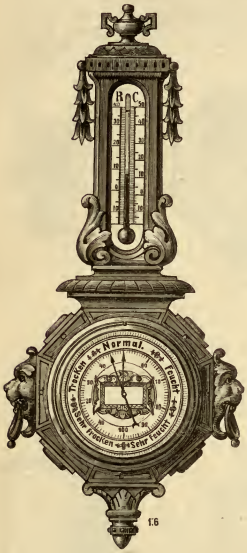
2005. — do., Daniel's with stand . . . . . —. 14. — 1. 1. — or 2. 2. —

2006. — do., Saussure's Hair-Hygrometer, simple, on japanned wood with thermometer . . . . . —. 14. —

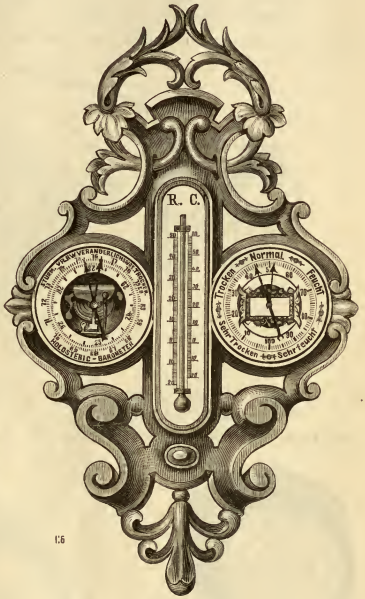
2007. — do., entirely of metal, with thermometer and box . . . . . 2. 2. —

2008. — do., Ernecke's New Hair-Hygrometer in brass frame . . . . . 1. 15. —

		£	Sh.	d.
	Regnault's Hygrometer.			
2009.	— do., same with thermometer, in oak-wood-frame	2.	6.	—
2010.	— do., with thermometer and aneroid-barometer, in oak-wood-frame . .	3.	10.	—



No. 2009.



No. 2010.

No. 2011.

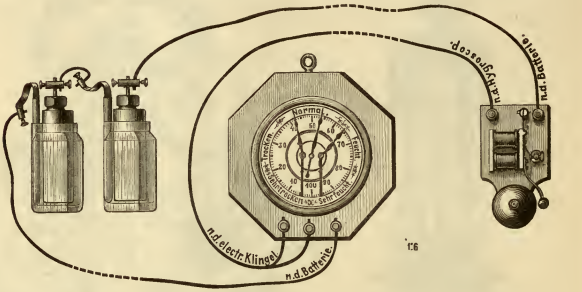
2011.	— do., in varnished metal-casing	1.	3.	—
2012.	— do., with thermometer upon the scale	1.	9.	—

£ Sh. d.

Regnault's Hygrometer.

2013. — do., with ringing arrangement, the electric current is closed by the index of the instrument at two different degrees of humidity, which may be at liking determined. — Most practical for hot-air-heating-systems, spin-houses, breweries. — In japanned metal-casing, without ringing arrangement and elements . . . . . 1. 15. —

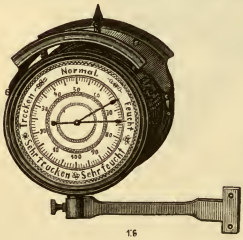
2014. — do., same as 2012, but in brass-frame on polished wood-board . . . 2. 6. —



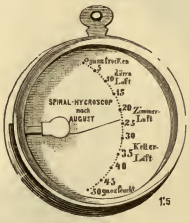
No. 2013 u. 2014.

2015. **Brass-Arm by means of which the hygrometers** No. 2008 and 2011 may be fastened out of the window . . . . . —. 7. —

2016. **Eaves for placing upon the hygrometers** No. 2008 and 2011 . . . . . —. 4. 9



Arm and Eaves or No. 2015 and 2016.



No. 2017.

No. 2019.

2017. **August's Hygroscope.** — With vegetable fibre, metal casing, opal-glass-scale —. 16. —

2018. — do., same, with thermometer . . . . . 1. 1. —

2019. — do., in japanned metal-casing . . . . . —. 8. 9

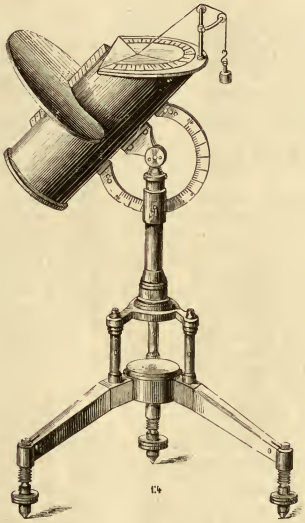
2020. — do., same with a thermometer . . . . . —. 11. 6

2021. **August's Psychrometer,** on metal-stand, with opal-glass-scale divided into tenths of degrees 2. 17. 6

2022. — do., same, each degree divided into fifths of degrees . . . . . 2. 8. —

2023. — do., on opal-glass-scale, each degree divided into tenths, but on a simple wood-stand . . . . . 1. 17. —

		£	Sh.	d.
	August's Psychrometer.			
2024.	— do., each degree divided into fifths	1.	12.	6
2025.	— do., on paper scale, each degree divided into tenths	1.	12.	—
2026.	— do., on paper scale, each degree divided into fifths	1.	6.	6
2027.	**Pschyrometer, for travellers,** with dissectible brass-stand and box	3.	10.	—
2028.	**Rüdorf's Apparatus for determining the quantity of vapour** contained in the atmosphere. — Report of the German chemical Society, XIII$^{th.}$ year; No. 2, 1880	2.	12.	—
2029.	**Rain-Measurer,** simplest kind, of japanned tin-plate	1.	3.	—
2030.	— do., Ernecke's with automatical registering	4.	6.	—



No. 2036

2031.	**Anemometer,** with Robinson's dish-cross. dissectible, numbering up to 10,000 rotations, in box	5.	10.	—
2032.	— do., Casella's. — With stopping-arrangement and numbering-work to be used up to 10,000,000 meters, with leather box	4.	17.	6
2033.	**Wild's Wind-flag**	2.	6.	—
2034.	**August's Apparatus for measuring the height of the sun** and for determining the exact time of day	2.	2.	—
2035.	**August's Sun Dial (Skiostate)**	2.	2.	—
2036.	— do., same, in most perfect execution	10.	7.	6
2037.	— do., same with heliostate	13.	15.	—
2038.	**August's Fenestrole**	—.	17.	6
2039.	**August's Apparatus for indicating mid-day**	—.	8.	9

Set I

of Apparatus for Board and Public Schools, where Elementary Science is taught

combined by Ferdinand Ernecke at Berlin.

		£	Sh.	d.
2040.	1 Parallelogram as No. 7 .	—.	8.	6
2041.	1 inclined plane as No. 19	—.	17.	6
2042.	1 Mechanism for explaining the screw as No. 26 . . .	—.	2.	6
2043.	1 Stand with one moveable and one fixed pulley . . .	—.	12.	—
2044.	1 Lever-Apparatus. — Frick as No. 65	—.	8.	6
2045.	Equilibrium figures No. 76	—.	5.	9
2046.	1 Chinese Stair-chimber No. 82	—.	3.	6
2047.	10 Bolognian flasks as No. 109	—.	2.	—
2048.	25 Batavian Glass-Tears as No. 110	—.	1.	6
2049.	1 pair of adhesive Glass-Plattes as No. 121	—.	6.	9
2050.	1 Bertram's Centrifugal-Machine as No. 146 . . .	1.	5.	3
2051.	1 Centrifugal-Pendulum as No. 149	—.	5.	9
2052.	1 Glass-Ballon as No. 169	—.	4.	6
2053.	1 Apparatus showing the difference of the diameter of earth — as No. 185 . . .	—.	7.	—
2054.	1 Apparatus-laws of the Pendulum — as No. 210 .	—.	7.	6
2055.	1 Apparatus — Illustration of buoyancy — as No. 276	—.	2.	9
2056.	1 Cartesian swimmer as No 287	—.	1.	9
2057.	1 Weight Areometer as No. 293	—.	5.	6
2058.	Communicating Vessels as No. 313	—.	1.	9
2059.	1 Segner's Watter-Wheel as No. 362	—.	6.	9
2060.	1 Suction-pipe as No. 403	—.	—.	9
2061.	1 Heronsball as No. 429 .	—.	1.	6
2062.	1 Model of a Sucking-Pump as No. 441	—.	2.	6
	to be Carried forward:	7.	1.	9

		£	Sh.	d.
	Brought forward:	7.	1.	9.
2063.	1 Model of a fire-engine as No. 448	—.	4.	9
2064.	1 Air Pump as No. 474 .	1.	3.	—
2065.	1 Receiving-Vessel for air-Pump as No. 495	—.	2.	3
2066.	1 testing barometer with scale as No. 501	—.	3.	6
2067.	1 India-Rubber-ball with cock as No. 523	—.	3.	—
2068.	1 simple labium as No. 759	—.	5.	3
2069.	1 tuning-fork **a** or **c** as No 830	—.	2.	3
2070.	2 Angular mirror as No 917	—.	3.	3
2071.	1 Caleidoscope, as No. 919	—.	3.	3
2072.	1 Spherical-mirror as No. 941	—.	4.	—
2073.	1 Prism No. 957	—.	1.	3
2074.	1 Microscope No. 1169 . .	—.	10.	3
2075.	1 dz. Microscopic Objects .	—.	3.	—
2076.	1 Apparatus action of steam No. 1331	—.	4.	—
2077.	1 Compression-tinder-box, as No. 1448	—.	5.	—
2078.	1 Apparatus-Conduction of heat — as No. 1458 . . .	—.	7.	—
2079.	1 Load-Stone as No. 1519	—.	1.	3
2080.	1 Horse-Shoe-load as No. 1524	—.	1.	9
2081.	1 Compass-Needle as No. 1526	—.	1.	6
2082.	1 Stand for the needle as No. 1528	—.	1.	3
2083.	1 Electrifying-Machine as No. 1562	1.	15.	—
2084.	1 Discharger as No. 1594.	—.	1.	9
2085.	1 Leyden Jar as No. 1598	—.	1.	9
2086.	1 Electroscope as No. 1647	—.	3.	6
2087.	1 Apparatus for decomposing water — as No. 1698	—.	7.	—
2088.	1 Flask-Element as No. 1727	—.	8.	6
2089.	Electro-Magnet as No. 1844	—.	3.	6
	Total £	13.	13.	6

The whole set of 50 apparatus packed in case . . . . . 13. —. —

Set II

for Superior Schools

combined by Ferdinand Ernecke at Berlin.

		£	Sh.	d.
2090.	1 Frick's Parallelogram as No. 2	—.	12.	6
2091.	1 Frick's Inclined plane — as No. 19	—.	17.	6
2092.	1 Archimedic Screw as No. 39	—.	10	6
2093.	1 Stand with one moveable and one fixed pulley	—.	12.	—
2094.	1 Frick's Lever-Apparatus as No. 65	—.	8	6
2095.	10 Bolognian-Flasks as No. 109	—.	2.	—
2096.	25 Glass-Tears as No 110	—.	1.	6
2097.	2 Adhesive Glass-Plates as No. 121	—.	6.	9
2098.	1 Cartesian Swimmer as No. 287	—.	1.	9
2099.	1 Nicholson's Weight Arcometer as No. 293	—.	5.	6
2100.	Communicating-Vessels as No. 313	—.	1.	9
2101.	1 Dutrochet's Endosmometer as No. 343	—.	3.	—
2102.	1 Segner's Water-Wheel as No. 362	—.	6.	9
2103.	1 Mariotte's Principle as No. 369	—.	10.	3
2104.	1 Suction-pipe glass-made, as No. 403	—.	—.	9
2105.	1 Tantalus-Cup No. 413	—.	3.	6
2106.	1 Heron's ball No. 429	—.	1.	6
2107.	1 Heron's fountain No. 433	—.	3.	6
2108.	1 Forcing pump No 444	—.	3.	6
2109.	1 Fire-engine No 448	—.	4.	9
2110.	1 Air-Pump No. 474	1.	3.	—
2111.	1 Receiving Vessel No. 495	—.	2.	3
2112.	1 Testing Barometer with scale No. 501	—.	3.	6
2113.	1 Ring for bursting bladders as No. 513	—.	1.	9
2114.	1 Mechanism for showing that a siphon ceases to flow as soon as the ordinary pressure of air is lessened, as No. 525	—.	2.	9
	to ce carried forward:	7.	11.	—
	brought forward:	7.	11.	—
2115.	1 lever-fountain as 527.	—.	8.	6
2116.	1 falling-tube as No 534.	—.	13.	9
2117.	1 breast-water-wheel as No. 610	—.	10.	3
2118.	1 monochord as No. 801	—.	10.	3
2119.	1 apparatus, Chladni's sounding figures as No. 811.	—.	13.	9
2120.	1 Angular mirror as No. 917	—.	3.	3
2121.	1 Caleidoscope No. 919.	—.	3.	3
2122.	1 Spherical mirror No. 941	—.	4.	—
2123.	Illustration of refraction No. 946	—.	13.	9
2124	Crystal Glass-Prism No. 957	—.	5.	3
2125.	6 lenses No. 977	—.	7.	—
2126.	1 optical model of the eye as No. 1099	—.	13.	9
2127.	1 thaumatrope as No. 1120	—.	2.	—
2128.	1 Magnifying glass with tripod-stand as No 1159	—.	2.	3
2129.	1 telescope No. 1240	—.	13.	9
2130.	1 chemical thermometer	—.	4.	—
2131.	1 pyrometer as No. 1329	—.	5.	3
2132.	1 Gay-Lussac's weight-thermometer as No. 1345.	—.	5.	9
2133.	1 3 sheets-horse-shoe-load as No. 1524	—.	12.	—
2134.	1 compass-needle as 1526.	—.	4.	—
2135.	1 electrifying machine as No. 1563	2.	4.	—
2136.	1 discharger as No. 1594.	—.	1.	9
2137.	1 Leyden Jar as No. 1598	—.	2.	—
2138.	1 Lightening tube No. 1614	—.	3.	—
2139.	1 Lightening plate No. 1615	—.	5.	3
2140.	1 Paper tuft No. 1617	—.	5.	3
2141.	1 Bullet-rain No. 1620	—.	3.	—
2142.	1 flying wheel No. 1622	—.	5.	3
2143.	1 isolating chair No. 1633	—.	6.	3
2144.	1 apparatus for decomposing water No. 1698	—.	7.	—
2145.	1 chromic acid flask element as No. 1727	—.	8.	6
2146.	1 electro-magnet No. 1841	—.	14.	—
2147.	1 electromagnetic hammer as No. 1857	—.	17.	6
	Total £	21.	9.	6

Price of the whole set, containing 58 apparatus in strong case . . £ 20 —. —

Set III.

for Colleges and Technical Schools,

combined by Ferdinand Ernecke of Berlin.

		£	Sh.	d.
2148.	1 parallelogram as No. 2 .	—.	12.	6
2149.	1 inclined plane as No 19	—.	17.	6
2150.	1 mechanism for explaining the screw as No. 26	—.	2.	6
2151.	1 Model of an Archimedic screw as No. 39	—.	10.	6
2152.	1 screw and wheel as No. 40	—.	9.	—
2153.	1 stand with moveable and fixed pulleys	—.	17.	6
2154.	1 lever-apparatus as No. 66	—.	17.	6
2155.	1 wheel on the axle as No. 74	—.	6.	3
2156.	1 Mechanism for explaining the equilibrium as No. 77	—.	6.	3
2157.	1 Mechanism for explaining the indifferent, stable and variable equilibrium as No. 79	—.	3.	6
2158.	1 Cone-running-up-hill as No. 80	—.	4.	3
2159.	1 Chinese Stair climber as No. 82	—.	3.	6
2160.	1 oblique tower as No. 91	—.	4.	9
2161.	1 Column-scale as No. 95	1.	3.	—
2162.	1 Model of a weigh-bridge as No. 106	—.	17.	6
2163.	1 Mechanism for demonstrating the elasticity of ivory — as No. 107	—.	13.	9
2164.	1 Bolognian Flask as No. 109	—.	2.	—
2165.	25 Batavian Glass-tears as No. 110	—.	1.	6
2166.	1 pair of adhesive glass plates as No. 121	—.	6.	9
2167.	1 falling-channel as No. 125	1.	7.	9
2168.	1 Centrifugal Machine as No. 147	1.	9.	—
2169.	1 Ball-Regulator as No. 151	—.	9.	—
2170.	Two Brass-balls as No. 155	—.	4.	9
2171.	1 Glass-Balloon as No. 169	—.	4.	6
2172.	Illustration of the difference between the longest and shortest diameter of earth — as No. 185	—.	7.	—
2173.	1 Apparatus Foucault's essay of pendulum — as No. 187	—.	6.	—
2174.	1 Box-level as No. 247 . .	—.	3.	—
	to be brought forward: £	13.	11.	—

		£	Sh.	d.
	Carried forward:	13.	11.	—
2175.	1 Pascal's Apparatus for measuring the pressure of ground — as No. 264 . .	1.	8.	6
2176.	1 Illustration of buoyancy — as No. 276	—.	2.	9
2177.	1 Apparatus for proving the Archimedic principle — as No. 282	—.	5.	6
2178.	1 Weight Areometer as No. 293	—.	5.	6
2179.	Communicating Vessels as No. 313	—.	1.	9
2180.	10 Capillary-tubes on stand as No. 333	—.	8.	9
2181.	1 Endosmometer as No. 343	—.	3.	—
2182.	1 Segner's Water-Wheel as No. 362	—.	6.	9
2183.	1 Apparatus for illustrating Mariotte's Principle as No. 369	—.	10.	3
2184.	1 Suction-pipe as No. 403	—.	—.	9
2185.	1 triangular Suction-pipe with sucking-tube and stop-cock as No. 410	—.	4.	—
2186.	1 Heron's ball as No. 429	—.	1.	6
2187.	1 Heron's fountain as No. 433	—.	3.	6
2188.	1 Model of a Sucking-Pump as No. 441	—.	2.	6
2189.	1 Model of a Sucking-Pump as No. 444	—.	3.	6
2190.	1 Model of a fire-engine as No. 448	—.	4.	9
2191.	1 Stop-Cock-Air-Pump with one chamber as No. 468 .	2.	17.	6
2192.	1 Receiving-Vessel as No. 495	—.	4.	6
2193.	1 Barometer-test as No. 501	—.	3.	6
2194.	1 Illustration of gravity of air — as No. 506	—.	8.	6
2195.	1 pair of Magdeburg hemispheres as No. 517. . . .	—.	16.	—
2196.	1 Lever-fountain as No. 527	—.	8.	6
2197.	1 Monochord as No. 801 .	—.	10.	3
	to be brought forward: £	23.	13.	—

		£	Sh.	d.
	Carried forward:	23.	13.	—
2198.	1 Reflection-Apparatus as No. 906	—.	13.	9
2199.	1 Angular mirror as No. 917	—.	3.	3
2200.	1 Spherical mirror as No. 941	—.	10.	3
2201.	1 Illustration of reflection as No. 946	—.	13.	9
2202.	1 Prism as No. 957	—.	1.	3
2203.	1 Stereoscope as No. 1109	—.	3.	6
2204.	1 dz. Stereoscope-Photographs	—.	3.	6
2205.	1 Camera obscura as No. 1135	—.	14.	—
2206.	1 Microscope as No. 1170	1.	—.	6
2207.	1 dz. Microscopic-objects	—.	4.	3
2208.	1 Lever-Pyrometer as No. 1324	—.	10.	6
2209.	1 Pyrometer as No. 1329	—.	5.	3
2210.	1 Compression-tinder-box as No. 1448	—.	5.	—
2211.	1 Heron's rotating ball as No. 1454	—.	3.	6
2212.	1 Load-Stone as No. 1519	—.	1.	3
2213.	2 Bertram's Load-Stones as No. 1520	—	7.	—
	to be brought forward:	£ 29.	13.	6

		£	Sh.	d.
	Carried forward:	29.	13.	6
2214.	1 Horse-shoe-load, with 3 foils, as No. 1524	—.	12.	—
2215.	1 Compass-Needle as No. 1526	—.	1.	6
2216.	1 Stand for it as No. 1528	—.	1.	3
2217.	1 Electrifying Machine as No. 1563	2.	4.	—
2218.	1 Apparatus to show the electric action of points as No. 1574	—.	5.	9
2219.	1 Distributing Conductor as No. 1585	—.	7.	—
2220.	1 Discharger as No. 1594	—.	1.	9
2221.	1 Leyden Jar as 1598	—.	3.	3
2222.	1 Paper Tuft — as No. 1617	—.	5.	3
2223.	1 Flask-Element as No. 1727	—.	8.	6
2224.	1 Vertical-Galvanoscope as No. 1751	—.	14.	—
2225.	1 Electro Magnet as No. 1841	—.	14.	—
2226.	1 Electro-Magnetic-Mallet as No. 1857	—.	17.	6
2227.	1 Index-Telegraph as No. 1872	1.	9.	—
		£ 37.	18.	3

Price of the whole set, containing 58 apparatus in wooden case . . . . 35. 10. —

Set IV

for Colleges and Technical Institutions.

combined by Ferdinand Ernecke of Berlin.

		£	Sh.	d.
2228.	1 Parallelogram of forces as No. 2	—.	12.	6
2229.	1 Inclined plane as No. 19	—.	17.	6
2230.	1 Illustration of the screw as No. 26	—.	2.	6
2231.	1 Pattern of a screw as No. 27	—.	3.	—
2232.	1 Model of an Archimedic screw as No. 39	—.	10.	6
2233.	1 Screw and wheel as No. 40	—.	9.	—
2234.	1 Apparatus for demonstrating the principles of the wedge — as No. 42	—.	14.	—
2235.	4 different pulleys with pulleys and support — as No. 56	1.	14.	6
2236.	1 Lever-Apparatus as No. 65	—.	8.	6
2237.	1 Wheel on the axle as No. 74	—.	6.	3
2238.	1 Mechanism for explaining the stable equilibrium as No. 77	—.	6.	3
2239.	1 Mechanism for explaining the indifferent, stable and variable equilibrium as No. 78	—.	2.	3
2240.	1 Cone running up hill as No. 80	—.	4.	3
2241.	1 Oblique tower as No. 90	—.	2.	3
2242.	1 Model of an Unequal-armed-balance as No. 102.	—.	9.	3
2243.	1 Model of a weigh-bridge as No. 106	—.	17.	6
2244.	1 Pair of adhesive glass-plates as No. 121	—.	6.	9
2245.	1 Falling-Channel as No. 125	1.	7.	9
2246.	1 Centrifugal Machine as No. 146	1.	5.	3
2247.	1 Ball Regulator as No. 151	—.	9.	—
2248.	2 brass-balls as No. 155	—.	4.	9
2249.	1 ball as No. 157	—.	8.	9
2250.	1 apparatus for demonstrating the difference between the longest and shortest diameter of earth — as No. 185	—.	7.	—
2251.	1 Gyroscope as No. 200	—.	17.	6
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2252.	1 Illustration of the laws of Pendulum as No. 210	—.	7.	6
2253.	1 Grit-Pendulum upon stand as No. 220	—.	17.	6
2254.	1 Box-Level as No. 247	—.	3.	—
2255.	1 Illustration of the equal transmitting of pressure in liquids as No. 251	—.	6.	3
2256.	1 Pasqnal's Apparatus for measuring the pressure of ground as No. 264	1.	8.	6
2257.	1 Illustration of buoyancy — as No. 276	—.	2.	9
2258.	1 Cartesian - Swimmer as No. 287	—.	1.	9
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2260.	1 Cold-Water-Swimmer as No. 306	—.	2.	9
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2262.	1 Endosmometer as No. 343	—.	3.	—
2263.	1 Segner's Water-Wheel as No. 362	—.	6.	9
2264.	1 Illustration of Mariotte's Principle as No. 369	—.	10.	3
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2272.	1 Stop-Cock-Air-Pump with one chamber as No. 468	2.	17.	6
2273.	1 Receiving - Vessel as No. 495	—.	2.	9
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2306.	1 apparatus for showing the action of steam in steam engines	—.	4.	—
2307.	1 Differential-Thermometer as No. 1362	—.	11.	6
2308.	1 Ice-Apparatus as No. 1398	—.	2.	6
2309.	1 Water-hammer as No. 1406	—.	1.	9
2310.	1 Pulse-hammer as No. 1407	—.	1.	—
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2367.	1 do. „ „ 1920	—.	4.	6
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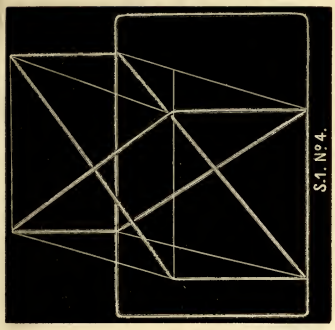
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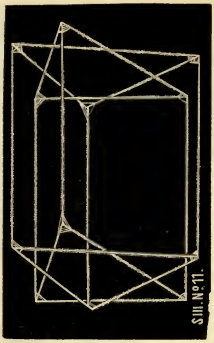
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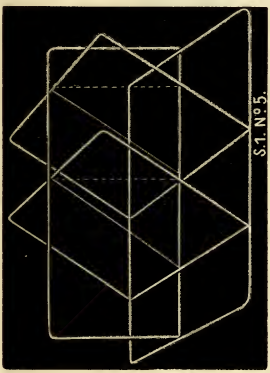
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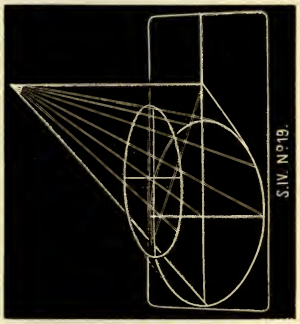
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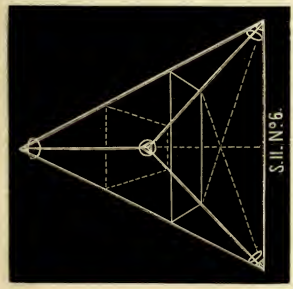
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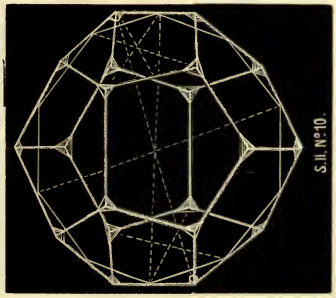
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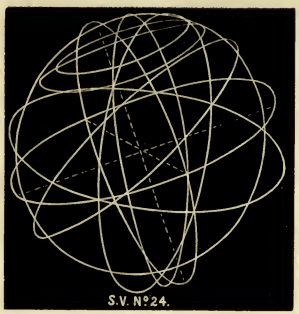

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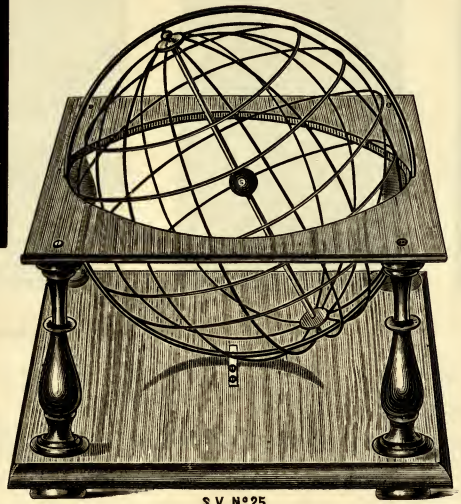

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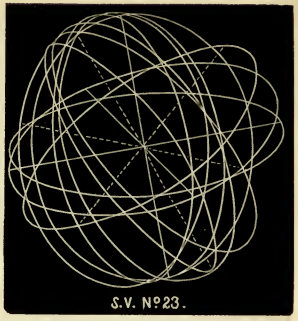

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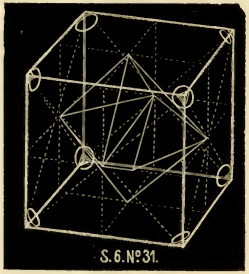

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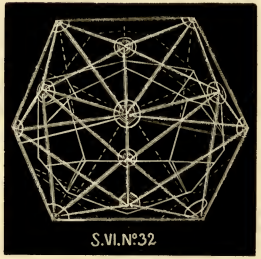

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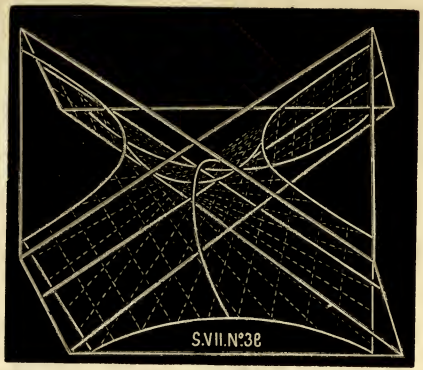

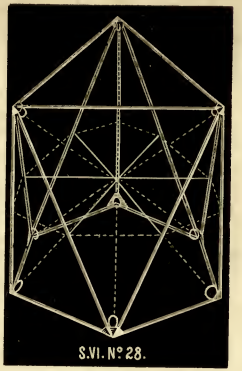

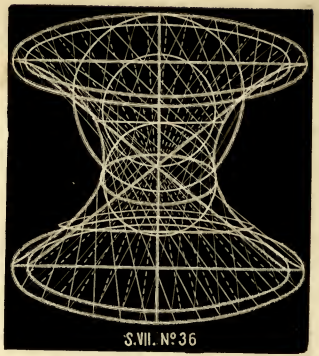

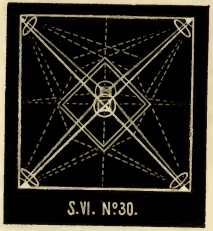

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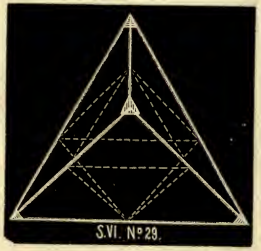

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